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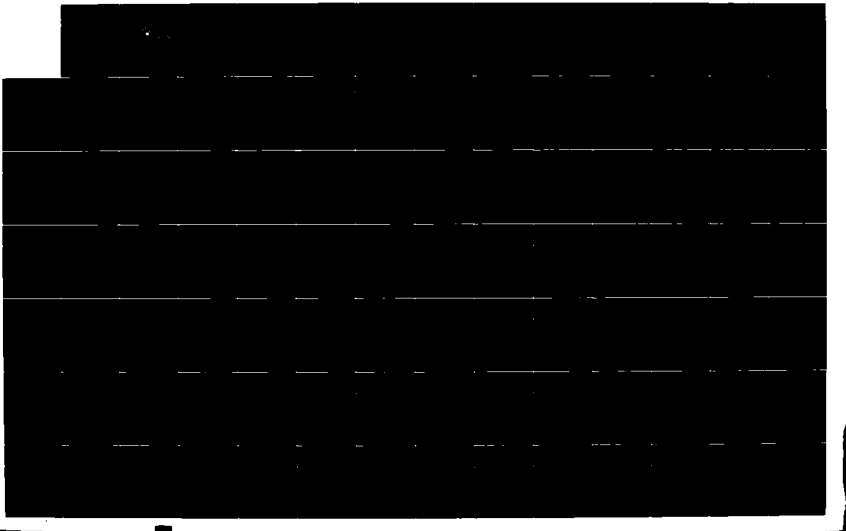

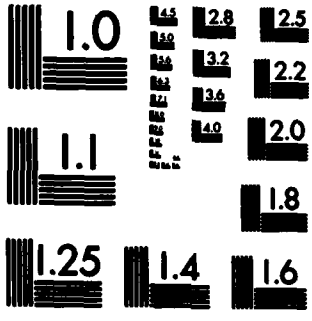

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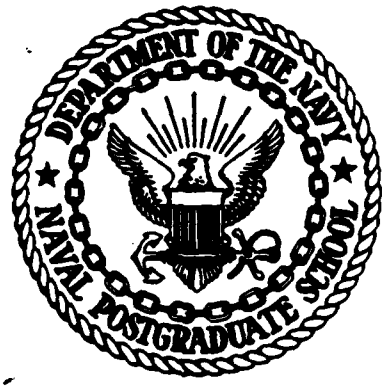

THESIS

IMPLEMENTATION OF A PERSONNEL DATABASE SYSTEM FOR CREW ALLOCATION AND REPORTS PRODUCTION IN A SMALL BATTLE SHIP'S ENVIRONMENT

by

Constantinos Anastasatos

June 1986

Thesis Advisor: G. S. Baker

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Crucial to the Naval mission, but administrative in nature, is the assignment of ship's company to temporary and permanent duty assignments. This study implements a personnel database system for personnel management on a small battle ship. dBASE III is used as a "Database Management Software" and the "System" is implemented as a collection of algorithms providing intelligent decisions about these assignments. It can be supported by an IBM PC/XT (or an IBM PC/XT compatible) microcomputer.

The system is designed to provide real time management decision information on crew allocations, as well as required periodic reports, based on current crewmember information.

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Implementation of a Personnel Database System
for Crew Allocation and Reports Production
in a Small Battle Ship's Environment.

by

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Lieutenant, Hellenic Navy
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Submitted in partial fulfillment of the
requirements for the degree of

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ABSTRACT

Crucial to the Naval mission, but administrative in nature, is the assignment of ship's company to temporary and permanent duty assignments. This study implements a personnel database system for personnel management on a small battle ship. dBASE III is used as a "Database Management Software" and the "System" is implemented as a collection of algorithms providing intelligent decisions about these assignments. It can be supported by an IBM PC/XT (or an IBM PC/XT compatible) microcomputer.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

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I. INTRODUCTION

A. INTRODUCTION TO THE PROBLEM

In every battle ship the personnel should be organized such that the ship could provide a variety of functions and operate under different situations, in different environments.

This personnel organization follows standards that each country consecrates and is based on the missions that each individual ship should be able to perform. This directly determines the number of men that serve on this ship, and the rank, the specialization and the skills of each member of the crew.

Although there are organization tables, general rules for assignment, and records of the characteristics (rank, specialization, education, special skills, experience, etc.) of each member of the crew, the assignment of the duties to each member of the crew is sometimes a very difficult and time consuming job. The task is even more complex due to the requirement to cross assign personnel to additional or collateral duties, which are required under certain conditions. In this case the appropriate personnel have to be selected in a real time environment but under the restriction that those absent from traditional jobs will not

be a detriment to the operation of the department in which they belong.

Personnel changes are an annual occurrence, and during these annual reassignments, it is quite often the case that the new member of the crew cannot be substituted directly for the departing personnel in all additional duties. New members may have served in similar additional duties.

If there is not enough time for the new member to be trained, these additional duties have to be reassigned among the other members of the crew until the training of the new members can be completed.

Both the initial construction and the reconstruction of these assignment tables are based on the existing records of the personnel. The assignment process is a constant reexamination of these records. Existing lists and tables must be compared with the new assembled information. The reevaluation of the current assignment lists can take a considerable amount of time.

The problem is critical both in large and small ships. In the first case, there are a large number of personnel assigned and an enormous amount of records must be examined. In the second case, that is in the case of small ships, the limited number of people that serve on the ship makes the assignment of the additional duties much more difficult simply because of a large number of jobs, and limited people to fill them.

Finally, in the Hellenic Navy only officers and the non-commissioned officers serve on a permanent basis, while the lower level personnel (seamen) serve for a standard (usually short) period of time. Therefore, from time to time projection tables reflecting future needs in lower level personnel must be assembled and sent to Navy training centers for new personnel availability planning in replacing those finishing their service obligations.

The purpose of this application is to substitute the traditional, manual way in which personnel records are used in a small battle ship for supporting personnel management, by the use of a microcomputer database system that can not only provide the appropriate information for personnel management decisions, but also provide some solutions to the assignment problem in real time.

Of course, personnel management must not be based solely on automated methods, or computer generated solutions. In this instance the human factor plays a very important role in this kind of data interpretation.

However, it is much better to have a quick basis from which to start the decision process than to start from the beginning with the full review process.

A small ship has been selected as a model; it can easily be extended to the personnel assignment problem in a larger one. The construction of the sample database for representation purposes is much easier, and no significant details

are likely to be omitted since the nature of the problem is the same in both large and small ships.

A model of personnel organization according to Hellenic Navy standards will be used, but some details will be omitted, however, due to the unclassified nature of the research project. Also some organization modifications have been used in order to generalize the standards used by most other countries.

B. INTRODUCTION TO DATABASE CONCEPTS

During the last fifteen years the use of database systems is dramatically increasing year by year. This is because a database system compared with a conventional digital computer has a number of advantages.

Database processing enables more information to be produced from a given amount of data. When data is physically partitioned, as it is in file processing systems (Figure 1), information can only be derived from each part individually, and not derived from a combination of these parts. The use of a database eliminates this disadvantage allowing the production of information as a combination of different storage parts (Figure 2).

The use of database processing has also the advantage of avoiding data duplication, or at least reduction of data duplication. This results in the savings of storage space and reduced processing requirements.

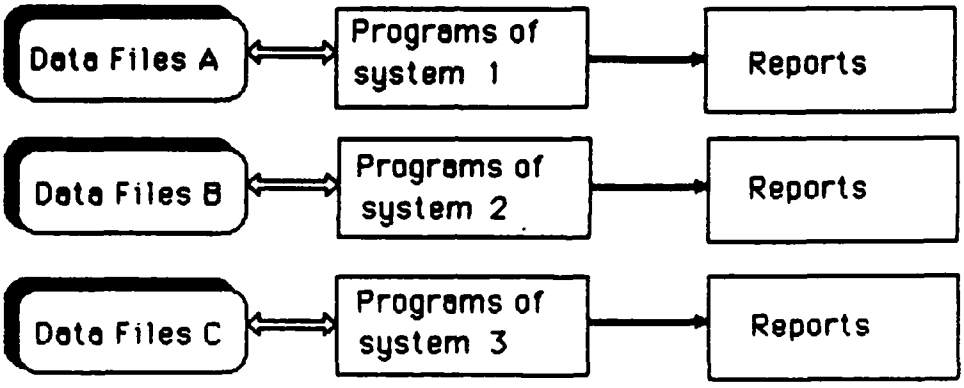


Figure 1. The traditional File Processing System

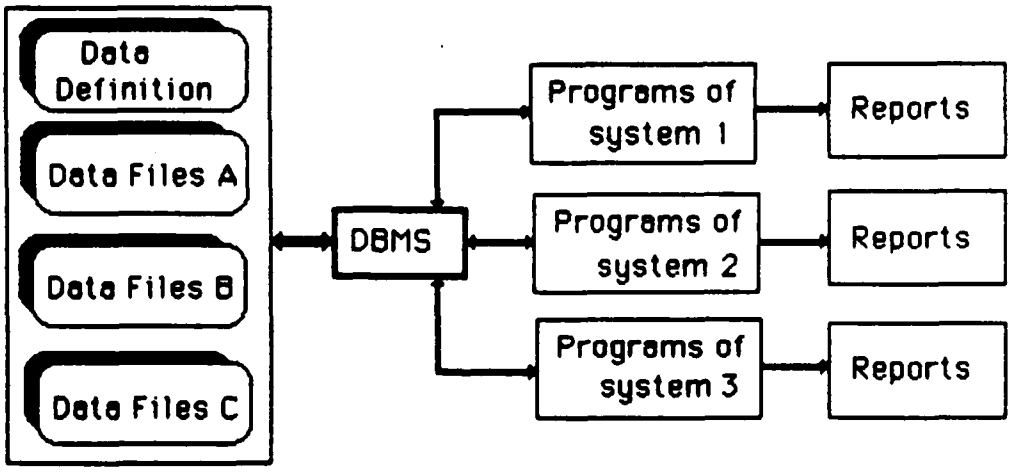


Figure 2. Database Processing System

In a file processing system each program used must contain a description of the format of the files it uses. Thus, the structure of files will be distributed across application programs. When the structure of a file is changed, the appropriate changes must be integrated into other programs that use this file. In a database application the application programs are not concerned with the structure used for data storage. This function is assigned to the "Database Mangement System" and thereby achieving a program/ data independence [Ref. 1].

Finally, the use of database processing has the advantage of better data management. Maintenance or updating of data can be much easier in a centralized database system and without (or at least with a minimum amount of) data duplication [Ref. 1].

C. DEFINITIONS AND TERMINOLOGY

Before presenting a general overview of such a database system, some basic definitions and terminology should be provided.

a) A "Database" is a shared collection of interrelated data designed to meet the varied information needs of an organization.

b) A "Database Management System" (DBMS) is a software system that performs all user's requests (update, insert, delete, retrieve) for data.

c) A "Database System" is a system to record and maintain information that is significant to an organization in the decision making process.

d) A "File" is an organized collection of records representing entities of the same type.

e) A "Record" is a collection of data concerning one entity of a file. Each record has an identical format.

f) A "Field" is a subdivision of a record and it contains a unit of information. It is the smallest unit of named data.

g) A "Key" is an attribute, or a set of attributes, whose value uniquely identifies each entity in a file.

h) A "Data Definition Language" (DDL) is a specialized language used for the description of the database.

i) A "Data Manipulation Language" (DML) is the programming language used to formulate queries or to write application programs for data manipulation.

j) A "Relationship" between files is an ordered list of these files. The relationship can be subdivided into the following three categories:

   (1) "One-to-one" relationship, when for each entity of a set of entities there is only one associated entity in another set of entities and visa versa.

   (2) "One-to-many" relationship, when for each entity of a set of entities there are many associated entities in another set of entities.

   (3) "Many-to-many" relationship, when each entity of a set of entities can be related with any number of entities in another set of entities and visa versa.

D. THE ARCHITECTURE OF A DATABASE SYSTEM

It is apparent from Figure 2, that the most important element in the system is the Database Management System (DBMS). This system controls the sequence of actions that are taken to store or retrieve data from the database. The basic components of such a system are shown in Figure 3

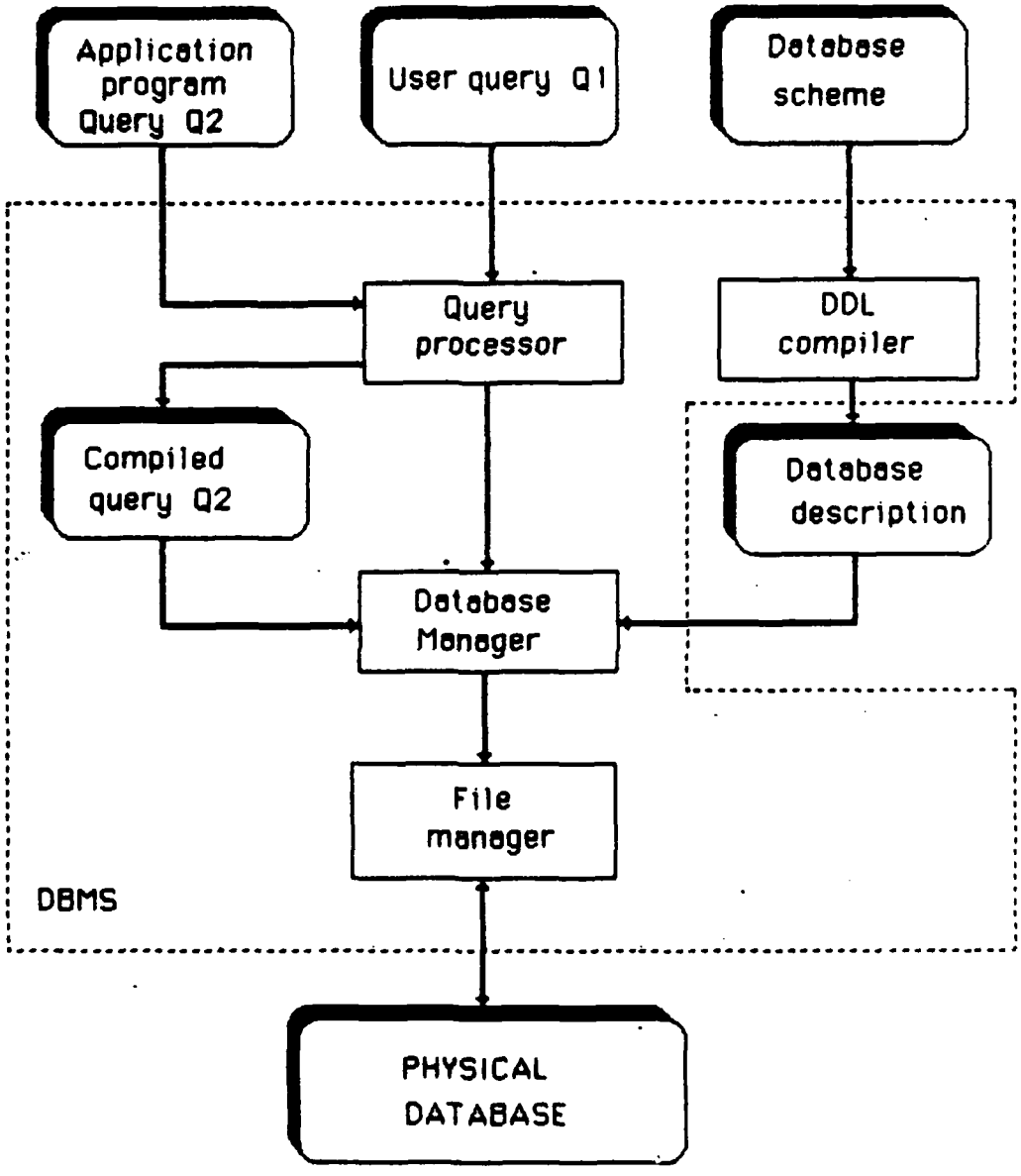


Figure 3. Schematic diagram of a database system.

(enclosed in dotted lines). In this figure [Ref. 2] a schematic diagram of a typical database system is represented. The non-shadowed rectangles represent software routines.

Queries coming either from application programs or directly from a user are routed to the query processor. The query processor needs to know the structure of the database in order for the query to be interpreted in the context of a particular database system. Information about the database can be built into the query processor itself or it can be stored separately (as in Figure 3) in database description tables. [Ref. 2]

The processed query is passed to a collection of routines called the "Database Manager". The database manager must be able to perform the following tasks:

a) To translate the query into terms that the "File Manager" can understand, i.e., into operations on files rather than on the more abstract data structures of the database description.

b) To provide the appropriate security, so that only authorized personnel are able to access the data stored in the database.

c) To validate the insertion or deletion requirements of a user query.

d) To provide synchronization when multiple users attempt to access the database at the same time.

The "File Manager" could be the general purpose file system provided by the underlying operating system, but in general it is a specialized file system able to handle the

complex file structures used to store the database information. Such complex structures are used to facilitate the rapid access and manipulation of data in the database [Ref. 2].

In a database system a variety of forms, or views, of data are defined. These views can be seen as different levels of abstraction that are used for the description of this database system. From these views the most commonly used are those represented in Figure 4 [Ref. 2], i.e., the "External" view, the "Conceptual" view, and the "Internal" view.

The "Conceptual" view, also called "schema" is the complete and logical view of data. In other words, regardless of how data is actually stored in its physical storage device, it is represented in such a way that can be understandable by a human.

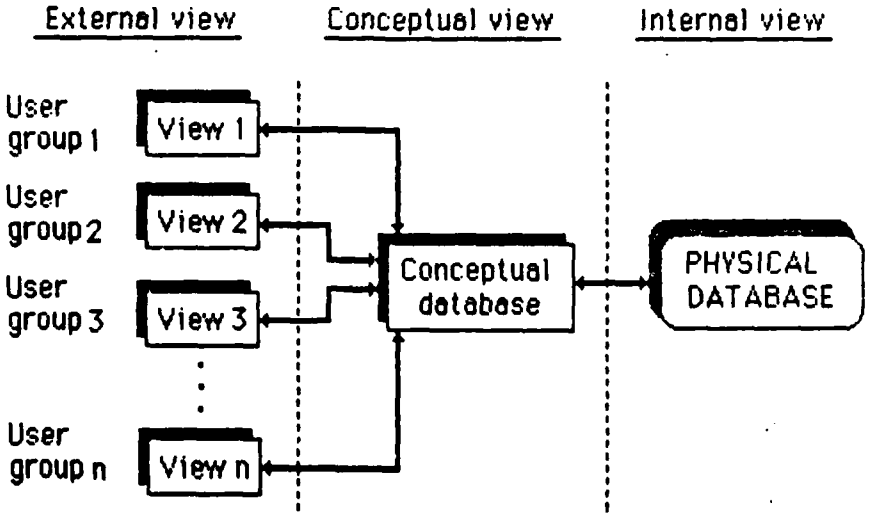


Figure 4. Levels of Abstraction in a Database System

But in general it is not desirable that every application program be able to access all the data in the database. So, another view is defined called "subschema" or "External" view and it defines a subset of the schema to be seen by a given application program or a user. There may be more than one external view, and they can overlap each other.

Finally, the third view of the data, called "Interval" view of "Physical" view is used to describe the form of the data as it appears to a particular processing computer, i.e., how data is physically arranged, and how it is allocated to files.

The following example makes the above distinction between views more understandable [Ref. 1].

For a database system used by a bank, the "database schema", or the "conceptual" view, might include the records for customers, the records for the checking accounts, the records for the savings accounts, the records for the loans, and the credit records.

Different "external" views, or "subschemas", can be defined. One may contain the customer records and the records for checking accounts. This would be the "checking subschema". Another may contain customer, loan and credit records and thereby be the "loan subschema" and so on.

Finally, the "internal" view has nothing to do with the customers, loans, credits, etc., but it describes what data

is used, how it is physically arranged and how it is allocated in files.

E. DATA MODELS

The real world associations of objects and events have to be represented as a "model", in order for this representation to be understandable. The same thing is required for the data representation. The model used for the data representation is called the "data model" and it is an abstract representation of the data about entities, events, activities, and their associations.

In the commercial database systems three kinds of data models are, in general, used. These data models are the "Hierarchical data model", the "Network data model", and the "Relational data model". Each one has its own features, advantages, and limitations.

1. The Hierarchical Data Model

In a hierarchical data model the data is represented as a set of nested one-to-many and one-to-one relationships.

The tree structure is used, and an organization is viewed as a hierarchy of positions. Multiple tree structures can be used in the same database and each tree consists of a hierarchy of records. Figure 5 gives an example of a representation of data organized in a tree structure.

The advantage of this data model is its data structure. The tree structure is well known and widely used in

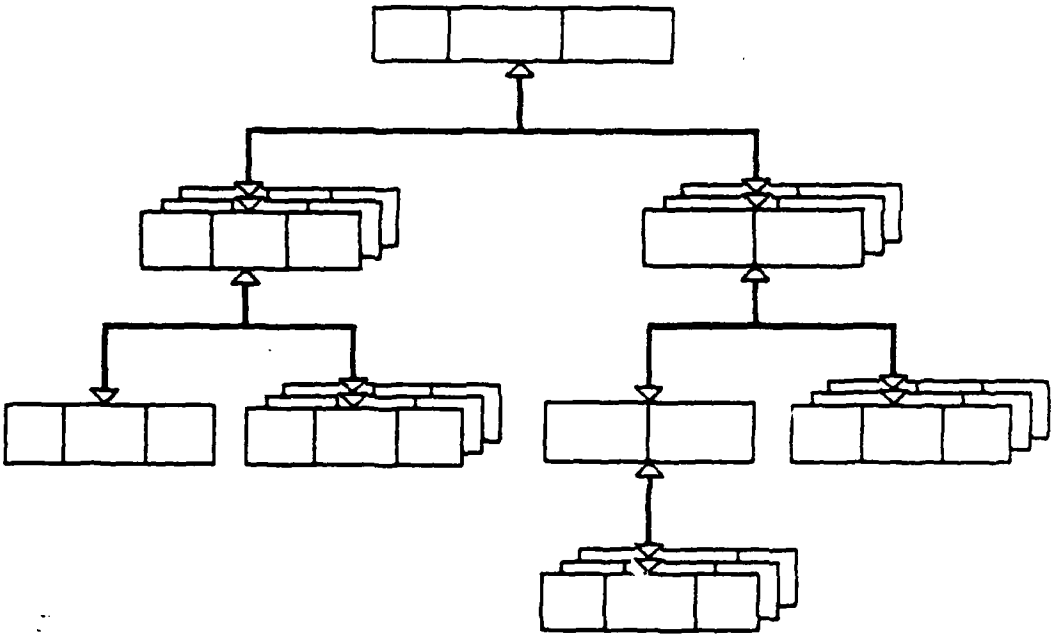


Figure 5. A Hierarchical data model

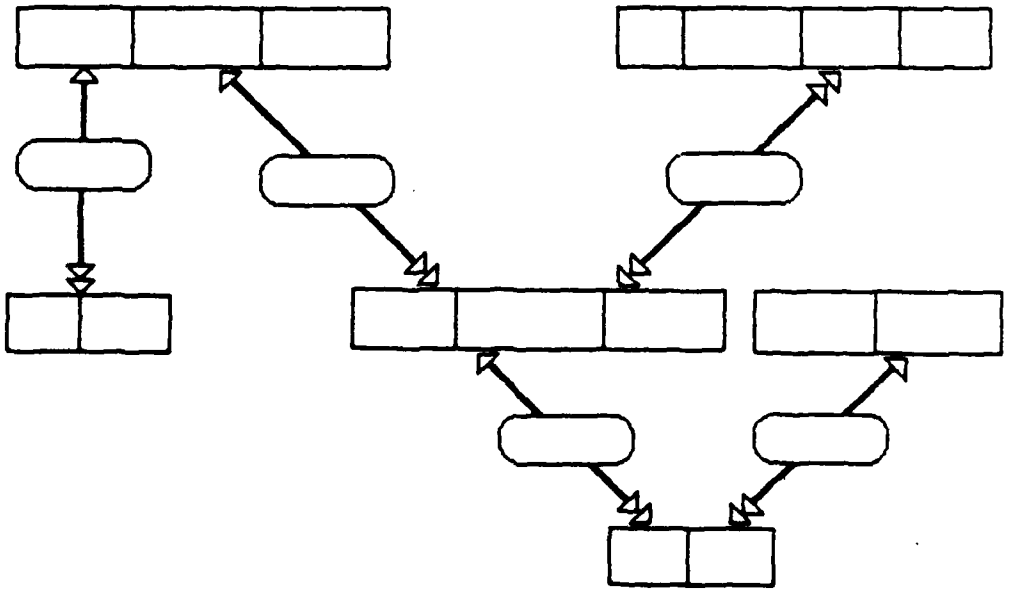


Figure 6. A Network data model

many other applications in addition to databases. The disadvantage is that this model cannot support the many-to-one relationship and, as a result, redundancy of data occurs.

2. The Network Data Model

The data in a network data model is represented by a set of record types and pairwise relationships between these record types.

The network data model supports the use of multiple one-to-many and many-to-one relationships between the same pair of record types, but relations that involve more than two record types are not directly permitted. In other words, the many-to-many relationship is not supported by the network models.

The basic data structure in a network database is the graph and Figure 6 provides an example of such a structure.

The network data model can be viewed as an extension of the hierarchical data model, or the hierarchical data model can be considered as a special case of a network data model, because both models use as a basic data structure the graph (a tree structure is always considered a special case of a graph). Neither can support the many-to-many relationship and only the network data model can support the many-to-one relationship. This is in fact the basic difference between a tree structure and a graph.

3. The Relational Data Model

The relational data model differs from the hierarchical and network data model. The mathematical concept which the relational data model is based on is the set theoretic relation. Some definitions [Ref. 2] of this theory should be given at this point for better representation of this model.

a) Domain is simply a set of values, and it is written as D_i.

b) The Cartesian product of domains D_1, D_2, D_3, ..., D_n which is written as $D_1XD_2XD_3...XD_n$ is the set of all n-tuples (u_1, u_2, u_3, ..., u_n) such that u_1 is in D_1, u_2 is in D_2, and so on.

c) A relation is a subset of the Cartesian product of a list of domains.

d) Tuples are the members of a relation.

Relations are represented as two-dimensional tables. Each row in such a table is a tuple, and each column corresponds to one component. Columns are given names called "attributes" and each column contains values about the same attribute. When attribute names are attached to columns of a relation then the order of the columns becomes unimportant. The set of attribute names for a relation is called the "relation scheme". Figure 7 shows a representation of a relation.

A relational data model represents data as a collection of relation schemes. Tables that are used to represent the relations must have the following properties:

a) Each column of such a table must contain values about the same attribute.

b) Each column must have a distinct name.

c) Each row is distinct.

d) The sequence of the rows is immaterial.

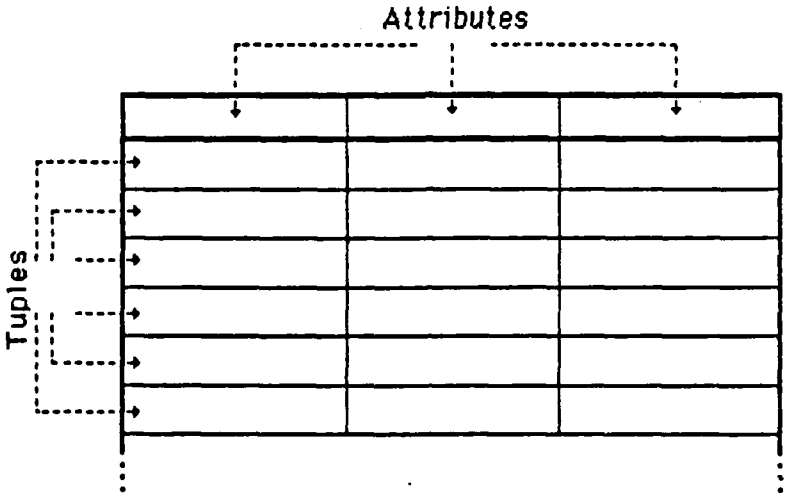


Figure 7. A Representation of a Relation

The advantage from the use of the tables as a representation method is that the tables are more understandable than the graphs or the trees. In addition to its mathematical basis, a relation data model differs from a hierarchical or a network data model in the following points:

a) All the types of relationships (one-to-one, one-to-many, and many-to-many) are supported by this model.

b) The query languages that are used in this data model allow the manipulation of data as groups and not procedurally as one record at a time.

c) Finally, the relational data model provides more data flexibility since relationships need not be predefined during the design phase.

II. ANALYSIS

According to the traditional approach for a software development, systems development can generally be thought as having two major components: systems analysis and system design.

System analysis is the process of gathering and interpreting facts, and using the facts to improve the existing system through better procedures and methods. System design is the process of planning a new system to replace or complement the old one [Ref. 3]. In other words, analysis specifies what the system should do, and design states how to accomplish the objectives.

The first step of the analysis phase is the system study which includes the accumulation of all existing information that leads to the need of a new system development as well as the collection of all problems related to the system in use.

The description of the existing situation and of the problems related to this situation is very important for two tasks of the analysis phase.

First, if the existing problems are well described, the requirements for the new system can be stated clearly, unambiguously and exhaustively.

Second, it is much easier for the person who has the authority to acept or not the starting of a project, to determine if the elimination of the existing problems and the proposed improvements satisfy one or more of the reasons for a project initiation.

Accordig to J. A. Senn [Ref. 3] the reasons for a project initiation are the following:

a. Greater processing speed

b. Better accuracy and improved consistency

c. Faster information retrieval

d. Reduced cost

e. Better security

In general, all of the above reasons should be satisfied by the use of a new system, but it is in each organization's responsibility to decide how many of the above reasons should be satisfied in order to make the determination if a new system is reasonable to be developed.

In the following parts of this chapter, the existing system will be described, an examination will be done of how many reasons for a project initiation are satisfied, and the requirements of the system under development will be stated.

A. DESCRIPTION OF CURRENT SYSTEM

As previously mentioned, standards exist for personnel organization in a battle ship so as to afford the ship the ability to operate under a variety of conditions.

According to the Hellenic Navy standards, which do not differ much from the standards used by other countries, the personnel in a battle ship are divided into two major categories. The first category includes personnel belonging to the "Deck" department and the second category includes the personnel belonging to the "Machine" department.

Each department must provide a number of functions to the operation of the ship. These functions usually form a hierarchy of subdepartments within the main department.

The "Deck" department serves all the needs of a battle ship from a war machine point of view and it includes all subdepartments partitioning this task, i.e., the "Communication" subdepartment, the "Weapons" subdepartment, the "Combat Information" subdepartment, etc.

The "Machine" department serves all the needs of a battle ship from the movement and repair point of view and it includes all the subdepartments whose functitons are related to these purposes, i.e., the subdepartment "Damage Control", the subdepartment "Electric Installation", the subdepartment "Main Engines", etc.

In larger ships, other departments exist. Among them are the "Supply" department and the "Sanitary" department. The functions of these departments are not at all ignorable. Small ships must have the appropriate personnel to provide the functions of these departments, but in an environment

whose personnel is limited, these departments do not exist as individual departments. The personnel responsible for supporting the real functions of these departments are, in general, attached to the "Administration" subdepartment of the "Deck" department.

Table I shows the subdepartments that each of the main departments include. Since the model of a small ship will be used in this study only the "Deck" department and the "Machine" departments are represented.

Also in Table I, the "Administration" subdepartment is considered to belong to the "Deck" department. This is not exactly the case since the "Administration" subdepartment must have access to all personnel in a battle ship. The reason for this representation is that the supervising

TABLE I.
CLASSIFICATION OF DEPARTMENTS AND SUBDEPARTMENTS

	DEPARTMENTS	
	DECK	MACHINE
SUBDEPARTMENTS	ADMINISTRATION	DAMAGE CONTROL
	WEAPON	ELECTRIC INSTALLATION
	COMBAT INFORMATION	ELECTRONIC EQUIPMENTS
	COMMUNICATION	MAIN ENGINES
	NAVIGATION	SPARE PARTS

officer of this subdepartment is the Executive Officer of the battle ship who belongs to "Deck" officers.

Each subdepartment provides a number of functions. For this reason several jobs have been identified and assigned to personnel belonging to this subdepartment. Because each person has to provide not only a specific job, but a group of related jobs, "job position" descriptions are used as a subclassification of the subdepartments. Each job position in general, includes more than one job, but it is assigned to a single person.

From another point of view, personnel are divided into three categories based on their rank: officers, non-commisioned officers or petty officers, and the lower level personnel which will be referred to as seamen.

The personnel of each category are divided into a number of subcategories according to specialization of each person.

Table II shows the three categories of the personnel according to those ranks, as well as the specializations that each category includes.

The specialization assigned is based on the education and training levels of each person. These specializations remain with an individual throughout his entire military career.

These two classifications, that is the classification of the job stations of a battle ship in departments and subdepartments, and the classification of the personnel

TABLE II.
PERSONNEL CLASSIFICATION ACCORDING TO SPECIALIZATIONS

SPECIALIZATION	OFFICERS	N.C. OFFICERS	SEAMEN
	DECK OFFICER	WEAPON USER	WEAPON USER
		WEAPON CONTROL	WEAPON CONTROL
		COMMUNICATION	COMMUNICATION
		NAVIGATION	NAVIGATION
		RADAR USER	RADAR USER
		SANITARY	SANITARY
		SUPPLY	SUPPLY
	ENGINEER	ELECTRICIAN	ELECTRICIAN
		ELECTRONIC	ELECRONIC
		ENGINEER	ENGINEER

according to individual specializations are related to the duty assignment problem.

Table III shows the relationship between the subdepartments belonging to the "Deck" department, and personnel specializations.

The "Administration" subdepartment does not require any specialization of its personnel. In general, the appropriate personnel are distributed across other subdepartments.

In entries for both non-commissioned officers and for seamen the word "ANY" is written to indicate that there is no need for a specific specialization in this position.

TABLE III.

RELATIONSHIP BETWEEN "DECK" DEPARTMENT AND PERSONNEL SPECIALIZATION

DECK DEPARTMENT		SUBDEPARTMENTS					SPECIALIZATIONS
		ADMINISTR.	ARMAMENT	COMBAT INFO.	COMMUNICAT	NAVIGATION	
	OFFICER	DECK OFFIC.	DECK OFFIC.	DECK OFFIC.	DECK OFFIC.	DECK OFFIC.	
	N.C.OFF.	ANY	WEAP.USER	WEAP.CONTR.	COMMUNICAT	NAVIGATION	
		SANITARY		RADAR USER			
		SUPPLY					
	SEAMEN	ANY	WEAP.USER	WEAP.CONTR.	COMMUNICAT	NAVIGATION	
		SANITARY					
		SUPPLY					

Usually persons with high levels of education, as for example persons of "Sanitary" or "Supply" specialization, are attached to this subdepartment because the physical subdepartments do not exist.

The same situation exists in the "Machine" department, and the relationship between the subdepartments of this department and the personnel specializations is indicated in Table IV.

The exception here is the "Spare Parts" subdepartment, but again it is assembled by appropriate personnel distributed over other subdepartments of this department.

TABLE IV.

RELATIONSHIP BETWEEN "MACHINE" DEPARTMENT AND PERSONNEL SPECIALIZATION

		SUBDEPARTMENTS					
		DAMAGE CTRL	ELECTR.INST	ELECTR.EQUIP	MAIN ENGINES	SPARE PARTS	
MACHINE DEPARTMENT	OFFICER	ENGINEER	ENGINEER	ENGINEER	ENGINEER	ENGINEER	SPECIALIZATIONS
	N.C.OFF.	ENGINEER	ELECTRICIAN	ELECTRONIC	ENGINEER	ANY	
	SEAMEN	ENGINEER	ELECTRICIAN	ELECTRONIC	ENGINEER	ANY	
		ELECTRICIAN					
		ANY					

Up to this point the procedure of assigning the appropriate personnel to the appropriate departments and subdepartments is straightforward and not difficult, except in the case of assembling the "Administration" and the "Spare Parts" subdepartments. Even then the selection of the appropriate persons can be easily accomplished.

Therefore, each person of the crew is assigned to a specific department and subdepartment, and the officer who manages the subdepartment, is responsible for the assignment of specific jobs to each member of his subdepartment. He is also charged with providing for the training of the personnel for which he is responsible, and the cooperation of his subdepartment with the other subdepartments.

The Executive Officer of the ship is the supervisor of all the subdepartments belonging to the "Deck" department, and the Chief Engineer of the ship supervises the subdepartments which belong to the "Machine" department.

There are differences between the operation of a battle ship and the operation of a commercial organization, where personnel arrive each morning, work for a specific period of time and leave until the next working day. A battle ship is an organization which must operate on an "around the clock" basis. Personnel are usually divided into shifts to cover the entire day.

Shift structures are not the same in all cases. For example, three 8-hour shifts, with equal number of persons in each one, usually suffice for the daily and routine work in port and during periods at sea with no threats, levels of alert or exercises. During periods of increased activity, as for example during exercises, two shifts, again with equal number of persons in each one, are required for ship operation. At times all personnel are called to duty when any kind of threat or level of alert exists. To plan for all three cases, job assignment is complicated by cross assignment of personnel. It must by necessity be done in advance.

In addition to the above, there are times when specific conditions occur which require that special purpose groups

must be assembled to facilitate temporary functional requirements. This further complicates job assignment since the absence of these personnel from their normal positions must not interrupt, even temporarily, the operation of the department, or subdepartment.

Related to the task of job assignment, is the completion of regular monthly, semiannual, annual, and "upon request" personnel reports. Some of them are simple and only require information stored in a single file. But some are complicated and require a time consuming examination of a variety of documents in order to extract the required information for the report. Some of these reports are critical for the current and future operation of the battle ship and must be complete and accurate. For example, the tables reflecting the future needs in lower level personnel must be maintained and available upon request.

B. PROPOSED IMPROVEMENTS OVER CURRENT SYSTEM

All the previously described tasks are currently provided manually. Therefore, the following improvements can be achieved by computer automation:

a) The processing speed will be much higher.

b) Improved accuracy in data retrieval can be achieved if the criteria for the job assignments is carefully described and taken into account in the application programs. Also in the case of reports and listings the possibility of information omission is eliminated.

c) The retrieval and listing of information will be much faster, easier and real time.

d) In a military environment, the cost of the manually provided functions cannot be easily estimated. Therefore, cost reduction as a requirement cannot be considered in the improvements of the existing system, except in terms of time. On the other hand, the monetary cost of installing a computer system is considered not significant since the proposed system will be designed so as to be supported by a microcomputer.

e) The level of security afforded the personnel information can be improved according to organizational requirements (in this case according to the security rules on a battle ship).

The previously mentioned possible improvements lead to the decision that this project is reasonable to start. It satisfies the requirements for project initiation as stated in the beginning of this chapter.

C. SYSTEM REQUIREMENTS

The system must be able to satisfy the following requirements so that the previously defined improvements can be achieved:

a) It must be able to store any information about personnel on a battle ship that is currently stored on papers. Actual storage may be different from the traditional organization in a files point of view, but some modifications in storage are necessary to avoid data duplication.

b) It must be able to provide any stored information or any combination of stored information upon request.

c) It must include sufficiently defined criteria so as to provide solutions for the job assignments as accurately, effectively, and equitably as possible.

d) It must be easy to use, or useable by personnel without special computer knowledge or skills.

e) It must be supportable on a microcomputer system.

D. SPECIFICATIONS OF THE BATTLE SHIP THAT WILL BE USED AS A MODEL

1. Personnel

Sixty-three men will be considered as ship's company on a battle ship. These men are divided into the following categories by rank:

a) The Commanding Officer

b) Six more Officers. Four of them are Deck Officers and two Engineers. Each one must be able to manage one or more subdepartments within his specialization.

c) Twenty-one Petty Officers. Four of them are Master Chief Petty Officers, three Senior Chief Petty Officers, three Chief Petty Officers, three Petty Officers 1st Class, three Petty Officers 2nd Class, and five Petty Officers 3rd Class. All Petty Officers are assigned to subdepartments according to his individual specializations.

d) Thirty-five Seamen. These men are assigned to subdepartments according to their specialization.

2. Ship Characteristics

From the armament point of view, the battle ship that will be used as a model for this application is equipped with the following weapons as shown in Figure 8.

a) Three 3" Automatic Guns. These guns are controlled by the central armament control console or locally by individual control consoles. They are referred to as *GUN 31, GUN 32, and GUN 33.*

b) Two 40mm Automatic Anti-Air Guns. These are also controlled by the central armament control console or locally by a user, and will be referred to as GUN 41 and GUN 42.

c) Two Groups of Surface to Air Missiles. These will be referred to as A/A MISSILES 1 and A/A MISSILES 2, and are controlled by their own firing and control console.

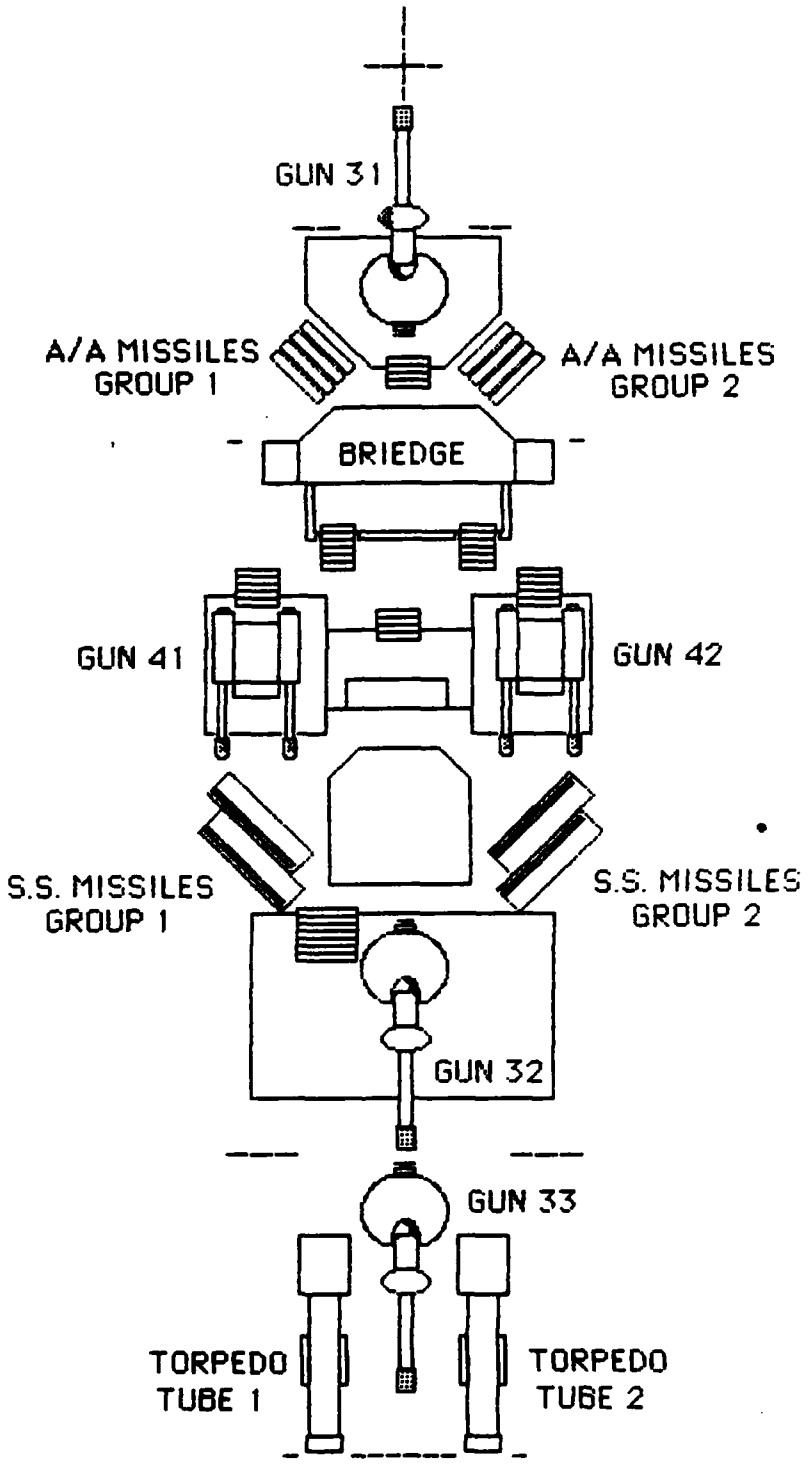


Figure 8. Model ship's weapons arrangement.

d) Two Groups of Surface to Surface Missiles. These will be referred to as SS MISSILES 1 and SS MISSILES 2, and are also controlled by their own individual consoles.

e) Two Surface to Surface Torpedoes. These will be considered as controlled from the central armament control console and will be referred to as TORPEDO1 and TORPEDO2.

f) One Long Range Radar. This will be used for air target detection and will be referred to as the AIR RADAR.

g) One Medium Range Radar. This will be used for surface target detection and will be referred to as the SURFACE RADAR.

h) Another Medium Range Radar. This will be used for navigation purposes and will be referred to as the NAVIGATION RADAR.

i) One Tracking Radar. It will be considered as cooperating with the central armament control console.

j) Additional Equipment. These additional equipments include anything remaining that is required to fulfill the mission of the battle ship. For example, the communication equipment, the ESM (Electronic Support Measure) equipment, the ECM (Electronic Counter Measure) equipment, etc.

From the machine or power plant's point of view, the model is equipped with the following:

a) Two Main Engines. Each one is installed in one of two engine rooms. The operating indicators and their controls are installed in the engine control room. These engines will be referred to as MAIN ENGINE 1 and MAIN ENGINE 2.

b) Three Electric Generators. These three generators provide the required electric power for the operation of all electrical equipment on the ship. They are referred to as ELECTRIC GENERATOR 1, 2, and 3.

c) Two Electric Power Distribution Tables. These are used to distribute the electric power to the appropriate destinations and they will be referred to as ELECTRIC POWER DISTRIBUTION TABLE 1 and ELECTRIC POWER DISTRIBUTION TABLE 2.

III. DESIGN

According to the traditional definition of the design, when it is referred to the software development, it is the translation of requirements into ways of meeting them. Systems design proceeds through the two phases: the logical design phase and the physical design phase [Ref. 3].

The systems logical design consists of the description of its features, that is the description of the outputs, the inputs, the files, and the procedures, all in the manner that meets project requirements.

The systems physical design is the set of activities following the logical design. It consists of a model for the production of a working system, that is the production of a system that accepts input from the users, processes data, and produces the appropriate reports.

In this chapter the logical design of the system under development, the features of the database management system that will be used, and the hardware requirements will be represented. The physical design of the system will be represented in the following chapter as "Implementation" of the system.

A. LOGICAL DESIGN

According to the requirements of the system, as previously stated at the end of the previous chapter, it

must be usable by personnel with very little knowledge about computers.

Therefore, the architecture of the system should be based on a sequence of menus and submenus which lead the user to the appropriate action. Figure 9 shows the architecture of such a menu driven system.

1. Classes of System Operations

The system will provide the following four classes of operations.

a. Modifications of the Existing Data

The user of the system should be able to insert a new record, to delete an existing one and to modify any record in the supporting system files.

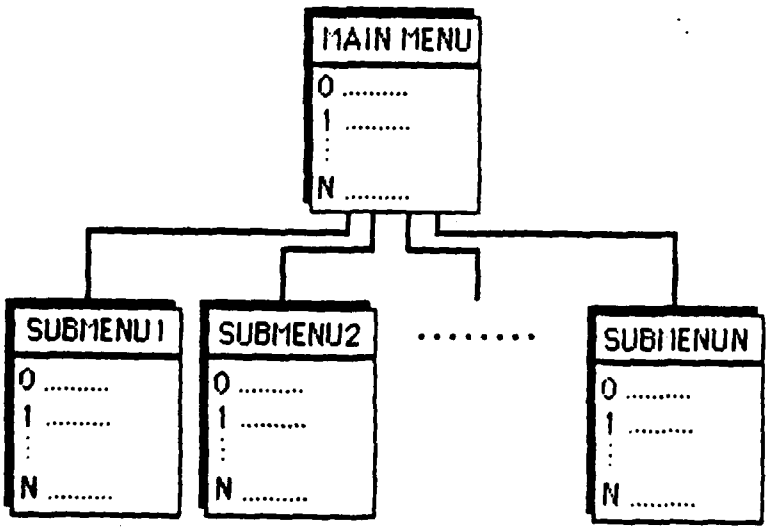


Figure 9. The Architecture of a "Menu Driven" System

b. Crew Allocation

The system should be able to provide different types of crew allocation. For example, it must allocate the crew into two or three shifts, and to assign members of the crew to the appropriate positions during special alert conditions. The type of crew allocation should be user selected from the appropriate submenu. The criteria used for each type of crew allocation will be described with the corresponding application program.

c. Production of Reports

A number of application programs will support the function of retrieving necessary information on personnel from the database and producing the appropriate lists and reports.

d. Assistance Operations

Although the above operations can satisfy the requests of the system, an additional function related to the tracking of modifications that have been done to the supporting system files is necessary. This audit trail will be contained in a file "Spy" in which any modifications of the supported files will be recorded with the time, the date, and the user's name. This file should not be accessible through the main menu or any submenu for security reasons. Also system access security should be provided at system start-up through a password control system.

A "USER" file will contain user(s) characteristics and corresponding password(s). A second file "STATIST" will accumulate the information on members of the crew that are deleted for any reason. Neither file should be accessible through the menu system.

2. The Output Reports

Before describing the supporting system files, it is desirable to describe the required outputs. This can help to better understand and organize data into the supporting system files, which in turn supports avoidance of data duplication.

The required system output reports in the form of tables and lists are the following:

a) Crew allocation into 2 shifts

b) Crew allocation into 3 shifts

c) Crew allocation for surface alert

d) Crew allocation for air alert

e) Crew allocation for general alert

f) List of men available to participate in some special purpose groups during one of the above alerts

g) List of personnel that serve in the battle ship in some user defined order

h) List of the personnel with those current service time in the ship

i) List of the personnel with their home addresses and phone numbers

j) List of the personnel allocated into departments

k) List of the personnel allocated into subdepartments

3. Required Input Information

In order to provide the previously described output reports, the following information must be input to the system.

a. Personnel Information

Each member of the crew in the battle ship has, in addition to his name, a serial number, a rank, a job specialization, a home address, and a home phone number. Also he has a specific date in which he has been received on the battle ship and a date that he will finish his service obligations (in case he belongs to lower level personnel) or he will depart from the ship for another tour of duty. In the latter case the date of departure is not always known in advance, but is announced a few months before the departure.

The above information about the personnel is enough for the construction of the periodic reports previously described. However, for job assignments additional information is required.

b. Job Position Information

In order for the assignment of job positions to be successful in the various cases, first the description of the job positions must be included in the input information. Additionally, the specialization and rank of the required crew member must be stated. Finally the hierarchical structuring of the departments and subdepartments along with

the specializations of the personnel that each one requires must be stated.

4. Description of the Supporting Application Files

The following files should be used in order to include all required input information.

a. Personnel File

Structure for file: CREWMEMB

FIELD	NAME	TYPE	WIDTH
01	SERNO	C	5
02	NAME	C	18
03	RANK	C	4
04	SPEC	C	4
05	INDATE	DATE	8
06	OUTDATE	DATE	8
07	ADDRESS	C	20
08	PHONE	C	8

b. Ranks File

Structure for file: RANKS

FIELD	NAME	TYPE	WIDTH
01	RANKCODE	C	4
02	RANKNAME	C	15

c. Specialization File

Structure for file: SPECIALT

FIELD	NAME	TYPE	WIDTH
01	SPECODE	C	4
02	SPECNAME	C	15
03	SUBDPCODE	C	4

d. Sudepartment File

Structure for file: SUBDEPTN

FIELD	NAME	TYPE	WIDTH
01	SUBDPCODE	C	4
02	SUBDBNAME	C	15
03	DEPCODE	C	4

e. Department File

Structure for file: DEPARTM

FIELD	NAME	TYPE	WIDTH
01	DEPCODE	C	4
02	DEPNAME	C	10

f. Alert File

The alert file contains the positions that should be filled during a general alert with the requirements for rank and specialization of the individual who will fill each position.

Structure for file: ALERT

FIELD	NAME	TYPE	WIDTH
01	POSCODE	C	4
02	DESCR	C	15
03	REQSPEC	C	4
04	REQRANK	C	4

g. File Containing the Crew Member's Requests for Leave

Structure for file: REQLEAVE

FIELD	NAME	TYPE	WIDTH
01	SERNO	C	5
02	REMLEAVE1	N	2
03	REQUEST1	DATE	8
04	REQ1DUR	DATE	8
05	REQUEST2	DATE	8
06	REQ2DUR	DATE	8

h. File Containing the Users' Name and Corresponding Passwords

Structure of files: USERS

FIELD	NAME	TYPE	WIDTH
01	PASSWORD	C	6
02	USERNAME	C	18

i. Spy File

Structure for file: SPY

FIELD	NAME	TYPE	WIDTH
01	DATE	DATE	8
02	TIME	C	5
03	USERNAME	C	18
04	JOBDESCR	C	12
05	PROGNAME	C	10

j. File that Contains the Information on Members of the Crew that Have Been Deleted from the Ship's Organization for Any Reason

Structure for file: STATIST

FIELD	NAME	TYPE	WIDTH
01	SERNO	C	5
02	NAME	C	18
03	RANK	C	4
04	SPEC	C	4
05	INDATE	DATE	8
06	OUTDATE	DATE	8

5. Description of the Codes Used in the Supporting Application Files

a. Codes for Ranks

CODE	NAME
FF10	COMMANDER
FF20	LT. COMMANDER

FF30	LIEUTENANT
FF40	LIEUTENANT JG
FF50	ENSIGN
PF10	MASTER CHIEF PO
PF20	SENIOR CHIEF PO
PF30	CHIEF PO
PF40	PO 1ST CLASS
PF50	PO 2ND CLASS
PF60	PO 3RD CLASS
SM10	SEAMAN

b. Codes for Specialization

CODE	NAME
D001	DECK
D002	WEAPON USER
D003	WEAPON CONTROL
D004	COMMUNICATION
D005	NAVIGATION
D006	RADAR USER
D007	SANITARY
D008	SUPPLY
E001	ENGINEER
E002	ELECTRICIAN
E003	ELECTRONIC

c. Codes for Departments

CODE	NAME
D000	DECK DPTM.
M000	MACHINE OP.

d. Codes for Subdepartments

CODE	NAME
D100	ADMINISTRATION
D200	WEAPONS
D300	COMBAT INFO
D400	COMMUNICATIONS
D500	NAVIGATION
M100	MAIN ENGINES
M200	DAMAGE CONTROL
M300	ELECTRIC INSTAL
M400	ELECTRON. EQUIP
M500	SPARE PARTS

e. Codes for Alert Positions (POSCODE)

CODE	DESCRIPTION
0001	COMMAND OFFICER
0002	NAVIGATOR
0003	NAVIG. RADAR
0004	HELMSMAN
0005	HF BRIDGE COMM.
0006	UHF BRIDGE COMM.
0007	LEFT OBSERVER

0008	RIGHT OBSERVER
0009	CIC SUPERVISOR
0010	AIR RADAR
0011	SURFACE RADAR
0012	TRACK RADAR
0013	CIC COMMUNICAT.
0014	E.S.M.
0015	E.C.M.
0016	CENTR WEAP CONT
0017	GUN 31 CONSOLE
0018	31 AMMO SUPPL1
0019	31 AMMO SUPPL2
0020	GUN 32 CONSOLE
0021	32 AMMO SUPP1
0022	32 AMMO SUPPL2
0023	GUN 33 CONSOLE
0024	33 AMMO SUPPL1
0025	33 AMMO SUPPL2
0026	GUN 41 CONTROL
0027	GUN 42 CONTROL
0028	TORPEDO TUBE 1
0029	TORPEDO TUBE 2
0030	A/A MISS CONTR
0031	A/A MISS TELEPH
0032	A/A MISSILES 1

0033	A/A MISSILES 2
0034	SS MISS CONTR
0035	SS MISS TELEPH
0036	SS MISSILES 1
0037	SS MISSILES 2
0038	RADIO ROOM SUP
0039	TELETYPE 1
0040	TELETYPE 2
0041	HF COMMUNICAT
0042	SURG ROOM SUPER
0043	SURG ROOM 1
0044	SURG ROOM 2
0045	SURG ROOM 3
0046	ENG CONTR ROOM
0047	MAIN ENG1 ASS1
0048	MAIN ENG1 ASS2
0049	MAIN ENG2 ASS1
0050	MAIN ENG2 ASS2
0051	ELECTR GENERAT1
0052	ELECTR GENERAT2
0053	ELECTR GENERAT3
0054	DISTR TABLE 1
0055	DISTR TABLE 2
0056	DAMAGE CONTROL 1
0057	DAMAGE CONTROL 2

0058	DAMAGE CONTROL 3
0059	DAMAGE CONTROL 4
0060	DAMAGE CONTROL 5
0061	DAMAGE CONTROL 6
0062	DAMAGE CONTROL 7
0063	DAMAGE CONTROL 8

B. SOFTWARE REQUIREMENTS FOR SYSTEM IMPLEMENTATION

The dBASE III, which will be used for the implementation of the personnel management system under discussion, is a relational DBMS (database management system) for micro-computers.

It contains its own extremely powerful programming language which permits the user to easily create his own application programs regardless of complexity.

The most important features as well as the limitations of dBASE III, as described by E. Jones [Ref. 4] and A. Simpson [Ref. 5] are described below.

1. Features of dBASE III

a) Program/data dependence. Changes in file structure do not affect the application programs.

b) Data can be easily updated.

c) Date and Memo daca types are provided. In addition to the common data types, such as characters, numerics, and logicals that are provided by other database management systems, dBASE III provides the "Date" data type which is a very powerful tool for dates management, and the "Memo" data type for managing texts.

d) Information saving. dBASE III can save information as disk files in nine specialized formats each serving a specific dBASE III processing need.

e) Sorting and indexing capabilities.

f) Creation and printing of formatted reports.

g) Date arithmetic.

h) Built-in high level DML language.

i) Interface capabilities. The dBASE III allows interfacing with other software systems, i.e., SuperCalc, the Symphony, WordStar, etc.

2. Limitations of dBASE III

a. Number of Records in Each File

Each database file can have up to 1 billion records maximum, and the maximum size of each file is 2 billion bytes.

b. Number of Fields in Each Record

Each record can have up to 128 fields. The width of these fields can be no longer than 4,000 characters.

c. Number of Database Files Open at the Same Time

Ten database files can be opened at the same time, or fifteen files of all types. Seven index and one format file can be opened for each active database file.

d. File Names and Field Name Lengths

File names can be up to 8 characters long, while field names can be up to 10 characters long.

e. Active Memory Variables

The maximum number of active memory variables is 256. The total number of bytes for memory variables is 6,000.

All of the above values may be limited by the computer hardware configuration.

C. HARDWARE REQUIREMENTS FOR SYSTEM IMPLEMENTATION

The system can operate on a 16-bit microcomputer that uses MS DOS or PC DOS version 2.0 or newer, for example on an IBM PC, on an IBM PC/XT or any other 16-bit microcomputer fully compatible with one of the above mentioned microcomputers.

256K of RAM memory is the minimum requirement of the supporting database package. Although one disk drive can possibly be used, two disk drives is strongly recommended. The best configuration is one disk drive and one hard disk. A 10M hard disk is recommended because it is the most common, inexpensive, and reasonable configuration of a microcomputer. A hard disk is not required because of storage requirements, since all files and the application programs can be stored on a floppy-disk based system. However, it does greatly improve the execution time of the programs used in this application.

Any 80 column printer able to interface with the above mentioned microcomputers can be used.

IV. IMPLEMENTATION

The system's "implementation" or "Physical Design" is the set of activities following the "Logical Design", and it consists of the production of a working system, that is the production of a system that accepts input from the users, processes data and produces the appropriate reports [Ref. 3].

One very important job during the development of a software product is the construction of the user's manual. Without it, only the creator of the system can use it.

User's manuals differ in size and complexity according to the nature of the developed system. Therefore, user's manuals can be as simple as a few pages of notes about the use of the system, or as detailed as volumes of descriptions on the functions of the system.

The system under development is a "Menu driven" system, in which the user is led to the appropriate operation through the main menu, the submenus and his answers to the questions asked by the system. But, to better support user understanding about what is taking place during the various actions of the system, a detailed description of the application programs is given in this chapter. This description is based on operational details rather than on

detailed structure of the application programs. It substitutes the user's manual.

A. RUNNING THE SYSTEM

The user of the system has to call the "MASTER PROGRAM" by its name (DO masterpr). The first thing that this program does is to ask the user to insert his password. There is a file in the system named "USERS" that contains the user(s) name(s) with corresponding password(s). Therefore, more than one user can use the system if desired. This file is not accessible to the user through the main menu or through the different submenus.

If the user of the system inserts an incorrect password, he is exited to the operating system after receiving a message that he is not an authorized user. If the user inserts the correct password, then the "MASTERPR" calls the program "MAINMENU" which presents to the user his choices. The icon of the main menu is shown in Figure 10.

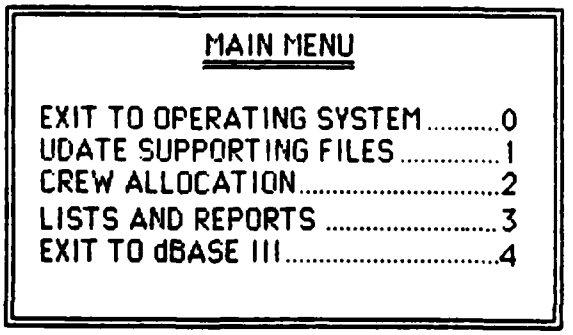


Figure 10. The Icon of the Main Menu

If the user's choice is "0" then he is exited to the operating system, and if his choice is "4" he is exited to dBASE III. The last option is for programmers when any modification must be done in any of the application programs, and for the manager of the system when he wants to access information created by the system but unaccessible through the main menu and submenus. In all the other cases (choice 1, 2, 3) the appropriate program is called, which in turn calls the corresponding submenu for further direction of the user through the different operations that the system can provide to him.

A small routine named "DELAY" is frequently used in many of the application programs to produce a small delay of the messages on the screen. Without this delay the messages would not be viewable by the user.

B. UPDATING THE SUPPORTING SYSTEM FILES

When the user's choice from the main menu is "1" then the "MASTERPR" calls the program "UPDATEDB". This program controls the different options available to the user for updating of the supporting system files.

The menu "SUBMENU 1", is represented to the user, as it appears in Figure 11.

As presented in this submenu, the user has the following options:

a) To exit into main menu by selecting "0".

b) To insert new records in "CREWMEMB" file by selecting "1".

c) To modify records in "CREWMEMB" file by selecting "2".

d) To modify records in "REQLEAVE" file by selecting "3".

e) To delete records from "CREWMEMB" file by selecting "4".

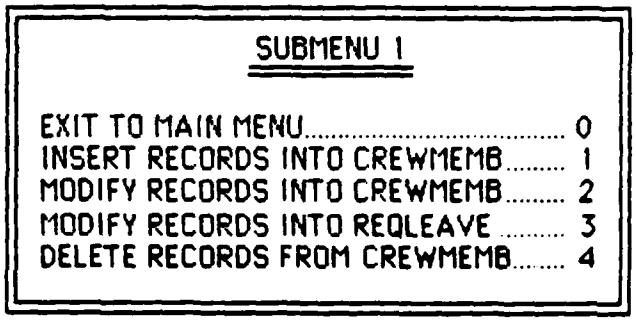


Figure 11. The Icon of the Submenu 1

1. Inserting Records into "CREWMEMB" File

When the user selects the option of inserting new files into "CREWMEMB", the "INSCREW" program is called. This program calls at the program "SCREEN 1" which presents to the user's screen a frame in which all interactive procedures take place.

The user is asked to insert the serial number of the new crew member to be inserted. If this serial number does not exist in the file "CREWMEMB", i.e., the new member does

not already exist, the system asks the user if he wants to see the codes for ranks and specialties.

If the user answers affirmatively then the "INSCREW" program calls the program "CODESCR" which generates a new frame on the user's screen which contains the codes for ranks and specialties.

The "INSCREW" program presents to the user for entry all the appropriate fields of a new record, with the exception of the field "outdate." The disenrollment date for a crew member is in general not known at the time he reports to the ship.

The program inserts the information into the "CREWMEMB" file, and prompts the user to update the file containing the requests for leave, that is the "REQLEAVE" file. The fields of the records of this file are presented to the user for input. The user may or may not insert information in this file at this time, however, a leave request record corresponding to the new member is created at this time.

The system continues with multiple entries depending on the user's answer to the system's question "MORE INSERTIONS?". When the user has no other insertions to make, and he answers "No" to the question "MORE INSERTIONS", he is exited to submenu 1, for selection of another option or return to the system through the main menu.

At the end of the execution(s) of program "INSCREW" if any insertions have been made an entry in the "SPY" file is automaticallly made with the user name, date, the time and the program name.

2. Modifying Records in "CREWMEMB" File

When the user selects the option to modify one or more records in the "CREWMEMB" file, the program "SCREEN 1" is called to install the interactive frame. The appropriate record is located by insertion of the serial number of the crew member whose record must be modified, and the modifiable fields are presented to the user. The enrollment date of the crew member and his specialty are not presented because these fields cannot be changed. If the user wants help, he can see the codes for ranks by answering "Yes" to the corresponding question, which causes the program "RANKSCR" to be called which generates a frame containing the appropriate information.

The modified record is presented to the user a final time before he is asked for "MORE MODIFICATIONS", while the appropriate information is inserted into the "SPY" file each time a modification has taken place.

3. Modifying Records in "REQLEAVE" File

When the user selects the option of modifying records in the "REQLEAVE" file, the appropriate record is located by insertion of the serial number of the crew member

whose record must be modified, the corresponding fields from a record contained in the "REQLEAVE" file which are modifiable are presented to the user and an entry in the "SPY" file is made whenever any modification is made.

4. Deleting Records from "CREWMEMB" File

Finally, when the user selects the option of deleting a record from the "CREWMEMB" file, the selection sequence of actions is the same. When a record from the "CREWMEMB" file is deleted, the record for the crew member in the "REQLEAVE" file is deleted also. Information about the deleted crew member is inserted into the "STATIST" file for statistic purposes, and an entry in the "SPY" file is made.

Other support system files can be updated, but these options are not available to the normal user of the system for reasons of information integrity.

C. PERFORMING THE CREW ALLOCATION

When the user's choice from the main menu is "2" the "MASTERPR" calls the program "ALLOCATE". This program controls the different options available to the user for performing crew allocation.

The program "ALLOCATE" calls the program "SUBMENU2" which generates and represents to the user submenu 2, as shown in Figure 12.

According to this submenu, the user of the system has the following options:

a) To exit the main menu by selecting "0".

b) To assign the appropriate persons into the appropriate position during a general alert by selecting "1".

c) To assign the appropriate person into the appropriate position during a surface alert by selecting "2".

d) To assign the appropriate person into the appropriate position during an air alert by selecting "3".

e) To allocate the crew into two shifts by selecting "4".

f) To allocate the crew into three shifts by selecting "5".

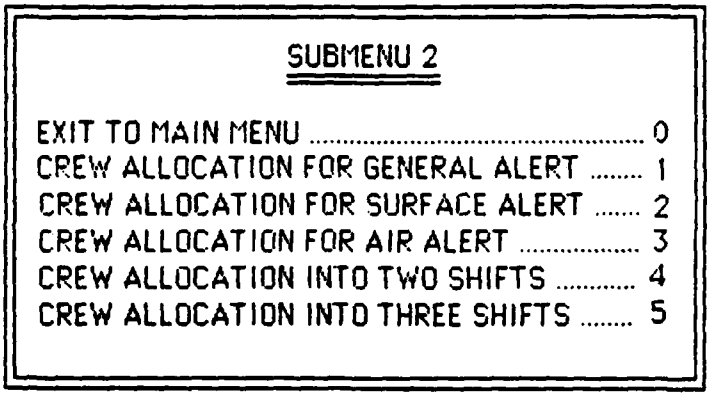


Figure 12. The Icon of the Submenu 2

1. Crew Allocation for "General" Alert

When the user selects the option of allocating the crew into general alert positions, the "ALLOCATE" program calls the "GENALERT" program. This program calls the program "SCREEN2" which simply generates a frame on the user's screen with program progress reports.

The program "GENALERT" creates two files named "TMPCREW" and TMPALERT" which are deleted at the end of the execution of the program "GENALERT". In the first file the "CREWMEMB" file is copied and in the second file the "ALERT" file is copied.

Also the program "GENALERT" erases all records contained in the file "GALERT". In this file the records resulting from a previous execution of the program "GENALERT" are stored, and they are deleted for storage of the records from the new execution of program "GENALERT".

The file "TMPALERT" is used as a reference, and sequentially contains for each record of this file, information about the position that must be manned, and the required rank (reqrank) and required specialty (reqspec). "TMPALERT" file positions are matched with members contained in the "TMPALERT" file.

If a person is found (having the required rank and specialty is located) his rank, name, and specialty are inserted in the file "GALERT" along with the position code and the position description. Otherwise the position remains unmanned, and the next position is examined.

If, after all the positions contained in the file "TMPALERT" have been examined and some remain unmanned, the user is informed that some positions remain unmanned due to a mismatch of the requirements and t e personnel availa-bility. He is asked if he wants to proceed ignoring the

factor rank. If the user agrees only the specialty factor is used for matching and, of course, only the unmanned positions and the remaining personnel are examined.

If, at the end of this iteration, positions still remain unmanned and personnel are available, the user is informed and prompted to fill the remaining positions regardless of the rank and specialty of the remaining personnel. If his answer is "Yes" this task is performed by assigning, in sequential order, the remaining personnel to the remaining positions.

If, at the end of this third loop, personnel remain unassigned, the user is asked if he wants to see these personnel. If he answers "Yes" then the available personnel are displayed to him. The same thing happens whenever the user rejects the solution when the required rank or specialty is to be ignored. In this case only the positions which requirements match exactly with the available personnel are filled. The other positions remain unmanned and the available personnel are presented to the user for manual completion of the allocation.

At the end of the execution of the program, an entry in the "SPY" file is made concerning the execution of this program.

2. Crew Allocation for "Surface" or "Air" Alert

The same scenario occurs when the user wants to perform a crew allocation for a surface or an air alert. In

the first case the program "SURFALERT" is called to perform the appropriate allocation and the file "SALERT" is used for storage of the records from the new execution of program "SURFALERT". In the last case the program "AALERT" is called to take care of the crew allocation for a surface alert condition and the file "AALERT" is used for storage of records from the execution of this program.

The difference between the crew allocation for a general alert and the crew allocation in the last two cases is that some positions not required to be manned in each one of the last cases are deleted from the "TMPALERT" file (which contains the positions to be manned with corresponding requirements) before any processing takes place.

3. Crew Allocation into Two Shifts

When the user selects the option of allocating the personnel into two shifts the program "SHIFT2" is called by the program "ALLOCATE".

The program "SHIFT2" calls the program "SCREEN2" which in turn installs the screen frame for interactive use during the execution of the program "SHIFT2".

The file "CREWMEMB" is copied into file "TMPSHIFT" and the records in this file are indexed on specialty and rank. Therefore, during the division of the personnel into two shifts, each shift will contain the same or almost the same number of persons of each specialty and rank. The file

"TMPSHIFT" is erased at the end of the execution of the program "SHIFT2".

Two more files are used and both are cleared of contents at the beginning of the execution of the program "SHIFT2". These files are the "SHIFT2_A" and the "SHIFT2_B" files. Both contain records resulting from the execution of the program "SHIFT2".

The indexed file "TMPSHIFT" is used and the members of the crew are divided into two shifts, i.e., the first member into shift A, the second into shift B, the third into shift A again, the fourth into shift B, and so on. As previously mentioned, the members of the crew in the file "TMPSHIFT" are already sorted according to specialty and rank. The results of the division, therefore, does not differ much according to specialty and rank of the members. When the allocation is finished, options are given to the user to view one of the two shifts or both on his screen. When he does not want to see the shift listing anymore, he selects the "exit" option which exits to the submenu 2 for performing another option or for exiting from the system through the main menu.

Again a corresponding entry in file "SPY" is made for the transaction.

4. Crew Allocation into Three Shifts

The similar routine occurs when the user selects the option to allocate the personnel into three shifts. In this

case the program "SHIFT3" is called to perform the required allocation and the results from the execution of these program shifts are inserted into three files names "SHIFT3_A", "SHIFT3_B", and "SHIFT3_C".

A small routine named "DELAY1" is used to provide the appropriate delay for screen presentations; and an entry in the "SPY" file is made for the transaction.

D. PROCURING THE REQUIRED LISTS

When the user's choice from the main menu is "3" the "MASTERPR" calls the program "REPORTER". This program controls the different options available to the user for producing the required lists.

The program "REPORTER" calls the program "SUMENU3" which generates and represents to the user the submenu 3 as shown in Figure 13.

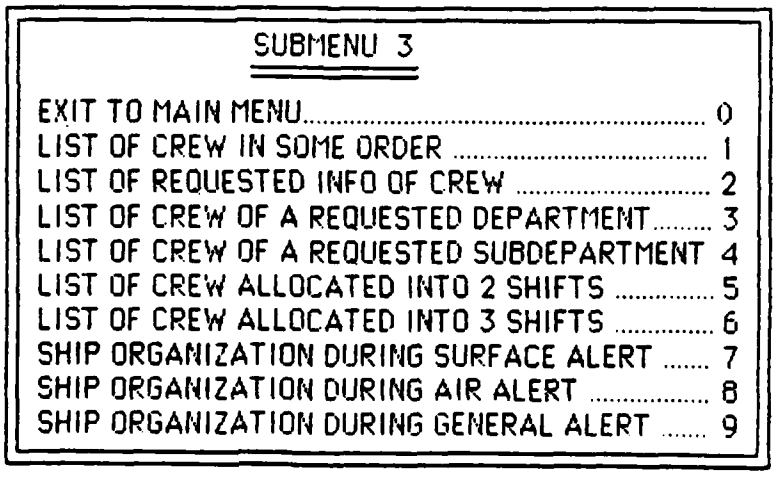


Figure 13. The Icon of the Submenu 3

According to this submenu, the user of the system has the following options:

a) To exit into main menu by selecting "0".

b) To produce a list of crew sorted in some user selected order by selecting "1".

c) To produce a list of crew containing only the desired information by selecting "2".

d) To produce a list of specific department members by selecting "3".

e) To produce a list of specific subdepartment members by selecting "4".

f) To produce a list of crew allocated into two shifts by selecting "5".

g) To produce a list of crew allocated into three shifts by selecting "6".

h) To produce a list showing the ship's organization during a surface alert by selecting "7".

i) To produce a list showing the ship's organization during an air alert by selecting "8".

j) To produce a list showing the ship's organization during a general alert by selecting "9".

All of the above lists are produceable either on the user's screen or on his printer, as selected.

1. List of Crew Sorted in Some User Defined Order

When the user selects the option of producing a list of crew members sorted in some order, the "REPORTER" program calls the "LIST 1" program. This program clears the file "ORDCREW", which will contain the records created during the program execution. The program "LIST 1" uses the file "CREWMEMB", which contains information on crew members,

and replaces the codes used for ranks and specialties with their corresponding names.

The user is asked if he wants the list sent to his screen or to his printer, which assigns the appropriate value to a Boolean variable named "printer", used for the selection of the desired output device.

The program "SCREEN2" is called which generates a frame on the user's screen. In this frame the user options are presented. By selecting one of the options the user can produce a list of crew members sorted on names, on ranks, on enrollment date, or on disenrollment date.

At the end of the presentation or printing of the list the user is asked if he wants to repeat the process. If he answers affirmatively, the action is repeated, otherwise he is exited to submenu 3 for another option.

2. Lists of the Crew Containing Selected Information

When the user selects the option of producing a list of crew members containing only selected information, the "REPORTER" program calls the "LIST 2" program. This program clears the file "INFOCREW", in which the records created during the program execution are stored, uses the file "CREWMEMB" and replaces the codes used for ranks and specialties with those names.

The user is asked if he wants the list on his screen or on his printer and the program "SCREEN2" is called to

generate the user's option frame. By selecting one of the options the user can produce a crew members list containing names and ranks, names and phone numbers, names and addresses, and names, addresses and phone numbers. The lists of these groups are always sorted on names.

At the end of the presentation or printing of the list the user is asked if he wants to view the list again or to make another copy; depending on his answer, he is provided again with the appropriate list or he is exited to submenu 3.

3. List of the Crew Allocated to a Specific Department

When the user wants to produce a list of personnel of a specific department, the program "LIST 3" is called by the program "REPORTER". The procedures of selecting the output device, of presenting the options to the user, and for multiple executions of the program "LIST 3" are the same as the previously described cases.

The file "DEPLST" is cleared and used for storage of the new records created by the program "LIST 3", and the "CREWMEMB" file is used to provide the required information of personnel. For each member of the crew contained in the "CREWMEMB" file, the code corresponding to his specialty is used for indexing. This code is used tc search for the subdepartment containing this specialty. When the appropriate subdepartment is located, its code is used to

determine the department in which this subdepartment belongs. Finally, when the appropriate department is located, its name is inserted to the "DEPLST" file along with the other information of the crew member.

When the desired lists have to be presented on the user's screen or printed, the distinction of the personnel in each department is made by the use of the department's name. The lists are sorted on ranks.

4. List of Personnel Allocated to a Specific Subdepartment

In this case the program "REPORTER" calls the program "LIST 4". This program controls the sequence of actions for the production of the appropriate lists. The procedure of production of the desired lists is almost the same as described above.

The names of the departments are presented to the user in the option frame. After selecting a department, the subdepartments belonging to this department are presented to him. From these subdepartments he selects one for which he wants a listing.

Some of the subdepartments, as for example the "Administration" subdepartment, must be assembled manually. In this case, the system informs the user. Multiple execution of the program "LIST 4" is again one of the user's options.

5. List of the Personnel Allocated into Two Shifts

When the user selects the option of producing a list of crew members allocated into two shifts the program "LIST 5" is called by the program "REPORTER". This program has been constructed with the same logic as the previously described programs. However, a lot of processing on files and records is not required since the two shifts already exist in the files "SHIFT2_A" and "SHIFT2_B". The records in these two files need only have the codes used for ranks and specialties replaced with their respective names.

This replacement is taking place under the control of the program "LIST 5", and the resulting records are stored in the file "SHIFTLST" for the construction of the appropriate list. Lists provided by this program are sorted on specialty and rank of the personnel.

6. List of the Personnel Allocated into Three Shifts

The program "REPORTER" calls the program "LIST 6" whenever the user selects the option of producing lists of personnel allocated into three shifts. And in this case, three files containing the appropriate shifts are used, "SHIFT3_A", "SHIFT3_B", AND "SHIFT3_C" files.

Replacement of the codes used for ranks and specialties with their corresponding names must also be performed on these files, and the same methods used in program "LIST 5" are employed.

7. List of Ship Organization During "Surface" Alert

When the user desires a listing of ship organization during a "Surface" alert, he makes the appropriate selection; the program "REPORTER" calls the program "LIST 7". This program uses the file "SALERT" to gather all the needed information, and the file "ALERTLST" to store the new records created during its execution.

On this point the user must know that the information that he will receive is derived from the file "SALERT", which may or may not contain a complete assignment of personnel to all alert positions. This is because the user who executed the program "SURFALERT", from which the file "SALERT" is created, has the option to complete the allocation manually when a mismatch on ranks or on specialty occurs; in which case some of the required positions necessary during this alert remain unmanned. If the user does not want to complete manually the allocation process, he has to execute the program "SURFALERT" to completion.

8. List of Ship Organization During "Air" Alert

The same logic and programs apply here as were used in the previous report listing. The program "LIST 8" is called by the program "REPORTER". The file "ALERTLST" is used again for storage of the new records created during the execution of the program "LIST 8" and the file "AALERT" is used to provide the appropriate information. In the case of

unmanned positions the user must execute the program "AIRALERT" to completion through submenu 2, option 3.

9. List of Ship Organization During "General" Alert

When the user selects the option of creating a list of ship organization during a "General" alert, the program "REPORTER" calls the program "LIST 9". This program uses the file "GALERT" to correlate appropriate information, and the file "ALERTLST" to store the results of its execution. If unmanned positions appear on the lists and the user does not want to complete the allocation manually he must reexecute the program "GENALERT", in which the file "GALERT" is created, to completion through submenu 2, option 1.

V. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to develop a database system model, suitable for implementation within a battle ship, and able to aid in the personnel management in this environment.

The main goal is to release manpower for other purposes, by increasing effectiveness, accuracy, and speed, of personnel management. Another goal was to provide solutions to the job assignment problem in a real time environment.

Three major factors influenced this study. The first one is the unclassified nature of it, which required the omission of details describing the problem. The second was the standarization of information describing the problem in order to more closely accommodate standards used by most nations. Lastly, the absence of previous work on the same subject has inspired its completion.

As a result, the developed system must be considered as a prototype model, which needs further modification and extension in order to be used in a real time environment. Although the system must be considered as a prototype in its present form, it is still able to substitute some manually provided and time consuming jobs, to produce a number of reports, and to provide real time management decision information.

dBASE III is used as a database management system, because both the relational data model on which it is based and its high level programming language is very suitable for implementing such a system.

The system is "menu driven". Therefore, it is not only easy to use but also easy to modify since both the user and the programmer are directed to the desired point through the sequence of menus and submenus.

It is already mentioned that this system is a prototype model, but due to its ability of easy modification it could be the basis for future work which could cover all the needs for personnel management in a battle ship.

APPENDIX A

A. MAIN PROGRAM AND MAINMENU

```
*** PROGRAM MASTERPR

*   This is the main program of the database system

CLEAR
SET TALK OFF
SET DELIMITER OFF
SET HEADING OFF
SET EXACT ON
PUBLIC psw
STORE '       ' TO psw
@ 11,30 SAY 'ENTER PASSWORD ==)'
         SET CONSOLE OFF
         ACCEPT TO psw
         SET CONSOLE ON
USE users
LOCATE FOR password = UPPER(psw)
IF EOF()
   SET COLOR TO W*
   @ 11,28 SAY '   UNAUTHORIZED USER       '
   DO delay
   SET COLOR TO W
   QUIT
ENDIF
CLOSE DATABASES
STORE .T. TO continue

DO WHILE continue
   DO mainmenu
   DO CASE
      CASE choice = 0
           CLEAR
           QUIT
      CASE choice = 1
           DO updatedb
      CASE choice = 2
           DO allocate
      CASE choice = 3
           DO reporter
      CASE choice = 4
           CLEAR
           RETURN
   ENDCASE
ENDDO
```

```
SET TALK ON
SET DELIMITER ON
SET EXACT OFF
SET HEADING ON
CLEAR ALL
RETURN
```

```
*** PROGRAM MAINMENU

CLEAR
PUBLIC choice
STORE 0 TO choice
@  7,18 SAY 'IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM,'
@  8,18 SAY ':                        MAIN MENU                   :'
@  9,18 SAY ':                        MMMMMMMMM                   :'
@ 10,18 SAY ':                                                    :'
@ 11,18 SAY ':      EXIT TO OPERATING SYSTEM ...... 0             :'
@ 12,18 SAY ':      UPDATE SUPPORTING FILES ....... 1             :'
@ 13,18 SAY ':      CREW ALLOCATION ............... 2             :'
@ 14,18 SAY ':      LISTS AND REPORTS ............. 4             :'
@ 15,18 SAY ':      EXIT TO dBASE III ............. 5             :'
@ 16,18 SAY ':                                                    :'
@ 17,18 SAY 'HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<'
SET COLOR TO W+
@ 20,30 SAY 'ENTER YOUR CHOICE ==>' ,
GET choice PICTURE '9' RANGE 0,5
READ
SET COLOR TO W
RETURN
```

```
*** PROGRAM DELAY

STORE 0 TO k
DO WHILE k < 40
   STORE k + 1 TO k
ENDDO
RETURN
```

B. PROGRAMS IMPLEMENTING THE UPDATE OPERATIONS

```
*** PROGRAM UPDATEDB

CLEAR
STORE ' ' TO updtcont
PUBLIC updtcode
DO WHILE UPPER(updtcont) # 'N'
       DO submenu1
       DO CASE
          CASE updtcode = 0
               STORE 'N' TO updtcont
          CASE updtcode = 1
               DO inscrew
          CASE updtcode = 2
               DO modicrew
          CASE updtcode = 3
               DO modleave
          CASE updtcode = 4
               DO delecrew
     ENDCASE
ENDDO
RETURN
```

```
***  PROGRAM SUBMENU1

CLEAR
PUBLIC updtcode
STORE 0 TO updtcode
@  7,18 SAY 'IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM,'
@  8,18 SAY ':                SUBMENU 1                 :'
@  9,18 SAY ':                MMMMMMMMM                 :'
@ 10,18 SAY ':                                          :'
@ 11,18 SAY ':     EXIT TO MAIN MENU ............... 0   :'
@ 12,18 SAY ':     INSERT RECORDS INTO CREWMEMB .... 1   :'
@ 13,18 SAY ':     MODIFY RECORDS FROM CREWMEMB .... 2   :'
@ 14,18 SAY ':     MODIFY RECORDS FROM REQLEAVE .... 3   :'
@ 15,18 SAY ':     DELETE RECORDS FROM CREWMEMB .... 4   :'
@ 16,18 SAY ':                                          :'
@ 17,18 SAY 'HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<'
SET COLOR TO W+
@ 19,29 SAY 'ENTER YOUR SELECTION ==>' ,
GET updtcode PICTURE '9' RANGE 0,4
READ
SET COLOR TO W
RETURN
```

```
*** PROGRAM INSCREW

*  This program inserts new records into CREWMEMB file.
* All other files affected by the newly inserted  record
*                       are updated

CLEAR
STORE 'Y' TO ansr
STORE .F. TO done
USE reqleave
INDEX ON SERNO TO reqleave
USE crewmemb
INDEX ON SERNO TO crewmemb

* open he required files
SELECT 1
USE users
SELECT 2
USE spy
SELECT 3
USE reqleave INDEX reqleave
SELECT 4
USE crewmemb INDEX crewmemb

DO WHILE UPPER(ansr) = 'Y'
   CLEAR
   DO screen1
   SET COLOR TO W+
   @  3,14 SAY 'INSERT NEW RECORD'
   @  4,14 SAY '================='
   SET COLOR TO W
   STORE '      ' TO sno
   STORE '                    ' TO nm
   STORE '     ' TO rnk
   STORE '     ' TO spc
   STORE '         ' TO idate,odate,req1,req2
   STORE '                         ' TO addr
   STORE '         ' TO phn
   STORE 0 TO dur1, dur2,rmlv

   @ 20,7 SAY 'ENTER SERIAL NUMBER ==)' GET sno ,
   PICTURE '99999'
   READ
   @ 20,7 SAY '                                    '
   FIND &sno
   IF EOF()
      STORE ' ' TO ans
      @ 20,7 SAY 'DO YOU NEED CODES? (Y/N) ==)' GET ans
      READ
      @ 20,7 SAY '                                    '
```

```
        IF UPPER(ans) = 'Y'
           DO codescr
        ENDIF

        @ 20,7 SAY '                                        '
        @  5,5 SAY 'NAME          :' GET nm
        @  6,5 SAY 'RANK CODE     :' GET rnk
        @  7,5 SAY 'SPEC. CODE    :' GET spc
        @  8,5 SAY 'ENROL. DATE   :' GET idate PICTURE '99/99/99'
        @  9,5 SAY 'ADDRESS       :' GET addr
        @ 10,5 SAY 'PHONE         :' GET phn
        READ

        APPEND BLANK
        REPLACE serno WITH sno, name WITH nm, rank WITH rnk,,
                spec WITH spc, indate WITH CTOD(idate),,
                address WITH addr, phone WITH phn

        STORE .T. TO done
        SELECT 3
        SET COLOR TO W+
        @ 12,13 SAY 'UPDATE REQLEAVE FILE'
        SET COLOR TO W
        @ 14,5 SAY 'REMAINING LEAVE    :' GET rmlv PICTURE '99'
        @ 15,5 SAY '1st LEAVE REQUEST :' GET req1 ,
                                          PICTURE '99/99/99'
        @ 16,5 SAY '1st LEAVE DURATION:' GET dur1 PICTURE '99'
        @ 17,5 SAY '2nd LEAVE REQUEST :' GET req2 ,
                                          PICTURE '99/99/99'
        @ 18,5 SAY '2nd LEAVE DURATION:' GET dur2 PICTURE '99'
        READ

        APPEND BLANK
        REPLACE serno WITH sno, remleave WITH rmlv,,
                request1 WITH CTOD(req1), req1dur WITH dur1,,
                request2 WITH CTOD(req2), req2dur WITH dur2

     ELSE
        @ 20,7 SAY 'RECORD ALREADY EXISTS'
        DO delay
        @ 20,7 SAY '                                        '
     ENDIF
     @ 20,7 SAY 'MORE INSERTIONS? (Y/N) ==)' GET ansr
     READ
     SELECT 4
ENDDO
```

```
* update SPY file
IF done
   SELECT 1
   GO TOP
   LOCATE FOR password = psw
   SELECT 2
   APPEND BLANK
   REPLACE date WITH DATE()
   REPLACE time WITH TIME()
   REPLACE username WITH A->username
   REPLACE jobdescr WITH 'INSERTION'
   REPLACE progname WITH 'INSCREW'
ENDIF

CLOSE DATABASES
DELETE FILE reqleave.ndx
DELETE FILE crewmemb.ndx
RETURN
```

```
*** PROGRAM SCREEN1

CLEAR
@  2,4 SAY 'IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM,'
@  3,4 SAY ':                                          :'
@  4,4 SAY ':                                          :'
@  5,4 SAY ':                                          :'
@  6,4 SAY ':                                          :'
@  7,4 SAY ':                                          :'
@  8,4 SAY ':                                          :'
@  9,4 SAY ':                                          :'
@ 10,4 SAY ':                                          :'
@ 11,4 SAY ':                                          :'
@ 12,4 SAY ':                                          :'
@ 13,4 SAY ':                                          :'
@ 14,4 SAY ':                                          :'
@ 15,4 SAY ':                                          :'
@ 16,4 SAY ':                                          :'
@ 17,4 SAY ':                                          :'
@ 18,4 SAY ':                                          :'
@ 19,4 SAY ':                                          :'
@ 20,4 SAY ':                                          :'
@ 21,4 SAY 'HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<'
RETURN
```

*** PROGRAM CODESCR

```
@  2,45 SAY 'IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM,'
@  3,45 SAY ': RANK CODES       SPECIALIZATION :'
@  4,45 SAY ':=============     ============== :'
@  5,45 SAY ':FF10 = CDR        D001 = DECK     :'
@  6,45 SAY ':FF20 = LT CDR     D002 = WPN USER:'
@  7,45 SAY ':FF30 = LT         D003 = WPN CTRL:'
@  8,45 SAY ':FF40 = LT JG      D004 = COMMUNIC:'
@  9,45 SAY ':FF50 = ENSIGN     D005 = NAVIGAT.:'
@ 10,45 SAY ':PF10 = M CH PO    D006 = RDR USER:'
@ 11,45 SAY ':PF20 = S CH PO    D007 = SANITARY:'
@ 12,45 SAY ':PF30 =   CH PO    E001 = ENGINEER:'
@ 13,45 SAY ':PF40 = PO 1 CL    E002 = ELECTRIC:'
@ 14,45 SAY ':PF50 = PO 2 CL    E003 = ELECTRON:'
@ 15,45 SAY ':PF60 = PO 3 CL                   :'
@ 16,45 SAY ':SM10 = SEAMAN                    :'
@ 17,45 SAY ':                                 :'
@ 18,45 SAY ':                                 :'
@ 19,45 SAY ':                                 :'
@ 20,45 SAY ':                                 :'
@ 21,45 SAY 'HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<'
RETURN
```

```
*** PROGRAM MODICREW

* This program modifies records into CREWMEMB file.

CLEAR
STORE 'Y' TO ansr
STORE .F. TO done
USE crewmemb
INDEX ON SERNO TO crewmemb
SELECT 1
USE users
SELECT 2
USE spy
SELECT 3
USE crewmemb INDEX crewmemb
DO WHILE UPPER(ansr) = 'Y'
   STORE '      ' TO sno
   DO screen1
   SET COLOR TO W+
   @  3,6 SAY 'MODIFY RECORDS (CREWMEMB FILE)'
   @  4,6 SAY '=============================='
   SET COLOR TO W
   @ 20,7 SAY 'ENTER SERIAL NUMBER ==)' GET sno,
   PICTURE '99999'
   READ
   @ 20,7 SAY '                                  '
   FIND &sno
   IF .NOT. EOF()
      * initialize memvars
      STORE '                    ' TO nm
      STORE '     ' TO rnk
      STORE '         ' TO odate
      STORE '                        ' TO addr
      STORE '         ' TO phn
      * display choices
      STORE 0 TO response
      @  5,11 SAY 'FIELDS TO BE MODIFIED'
      @  6,11 SAY '====================='
      @  7,11 SAY ' NAME ............ 1'
      @  8,11 SAY ' RANK ............ 2'
      @  9,11 SAY ' DISENROL. DATE .. 3'
      @ 10,11 SAY ' ADDRESS ......... 4'
      @ 11,11 SAY ' PHONE ........... 5'
      @ 12,11 SAY ' PHONE + ADDRESS . 6'
      @ 20,7 SAY 'ENTER FIELD NUMBER ==)' GET response,
      PICTURE '9' RANGE 1,6
      READ
```

```
* clear screen
@  5,8 SAY '                                '
@  6,8 SAY '                                '
@  7,8 SAY '                                '
@  8,8 SAY '                                '
@  9,8 SAY '                                '
@ 10,8 SAY '                                '
@ 11,8 SAY '                                '
@ 12,8 SAY '                                '
@ 20,7 SAY '                                    '

DO CASE
   CASE response = 1
        @ 5,5 SAY 'NAME          :' GET nm
        READ
        @ 5,5 SAY '                                      '
        REPLACE name WITH nm
   CASE response = 2
        STORE ' ' TO ans
        @ 20,7 SAY 'DO YOU NEED CODES? (Y/N) ==>' ,
        GET ans
        READ
        @ 20,7 SAY '                                     '
        IF UPPER(ans) = 'Y'
           DO rankscr
        ENDIF
        @  6,5 SAY 'RANK CODE    :' GET rnk
        READ
        @  6,5 SAY '                                     '
        REPLACE rank WITH rnk
   CASE response = 3
        @  9,5 SAY 'DISENRL. DATE:' GET odate,
        PICTURE '99/99/99'
        READ
        @  9,5 SAY '                                     '
        REPLACE outdate WITH CTOD(odate)
   CASE response = 4
        @ 10,5 SAY 'ADDRESS      :' GET addr
        READ
        @ 10,5 SAY '                                     '
        REPLACE address WITH addr
   CASE response = 5
        @ 11,5 SAY 'PHONE        :' GET phn
        READ
        @ 11,5 SAY '                                     '
        REPLACE phone WITH phn
   CASE response = 6
        @ 10,5 SAY 'ADDRESS      :' GET addr
        @ 11,5 SAY 'PHONE        :' GET phn
        READ
        @ 10,5 SAY '                                     '
        @ 11,5 SAY '                                     '
```

```
            REPLACE address WITH addr
            REPLACE phone WITH phn
      ENDCASE
      STORE .T. TO done

      * Display modified record
      @  5,5 SAY 'NAME          :' GET name
      @  6,5 SAY 'RANK CODE     :' GET rank
      @  7,5 SAY 'SPECIALTY     :' GET spec
      @  8,5 SAY 'ENROL. DATE   :' GET indate
      @  9,5 SAY 'DISENRL DATE  :' GET outdate
      @ 10,5 SAY 'ADDRESS       :' GET address
      @ 11,5 SAY 'PHONE         :' GET phone
   ELSE
      @ 20,7 SAY '      RECORD DOES NOT EXIST'
      DO delay
      @ 20,7 SAY '                                    '
   ENDIF
   CLEAR GETS
   @ 20,7 SAY 'MORE MODIFICATIONS? (Y/N) ==)' GET ansr
   READ
   CLEAR
ENDDO

* update SPY file
IF done
   SELECT 1
   GO TOP
   LOCATE FOR password = psw
   SELECT 2
   APPEND BLANK
   REPLACE date WITH DATE()
   REPLACE time WITH TIME()
   REPLACE username WITH A->username
   REPLACE jobdescr WITH 'MODIFICATION'
   REPLACE progname WITH 'MODICREW'
ENDIF

CLOSE DATABASES
DELETE FILE crewmemb.ndx
RETURN
```

```
*** PROGRAM RANKSCR

@  2,48 SAY 'IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM,'
@  3,48 SAY ':          RANK CODES           :'
@  4,48 SAY ':          ==========           :'
@  5,48 SAY ':     CODE    DESCRIPTION       :'
@  6,48 SAY ':     ----    -----------       :'
@  7,48 SAY ':     FF10    COMMANDER         :'
@  8,48 SAY ':     FF20    LT COMMANDER      :'
@  9,48 SAY ':     FF30    LIEUTENANT        :'
@ 10,48 SAY ':     FF40    LIEUTENANT JG     :'
@ 11,48 SAY ':     FF50    ENSIGN            :'
@ 12,48 SAY ':     PF10    MASTER CHIEF PO   :'
@ 13,48 SAY ':     PF20    SENIOR CHIEF PO   :'
@ 14,48 SAY ':     PF30    CHIEF PO          :'
@ 15,48 SAY ':     PF40    PO 1st CLASS      :'
@ 16,48 SAY ':     PF50    PO 2nd CLASS      :'
@ 17,48 SAY ':     PF60    PO 3rd CLASS      :'
@ 18,48 SAY ':     SM10    SEAMAN            :'
@ 19,48 SAY ':                               :'
@ 20,48 SAY ':                               :'
@ 21,48 SAY 'HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM('
RETURN
```

```
*** PROGRAM MODLEAVE

* This program modifies records into REQLEAVE file.

CLEAR
STORE 'Y' TO ansr
STORE .F. TO done
USE reqleave
INDEX ON SERNO TO reqleave
SELECT 1
USE users
SELECT 2
USE spy
SELECT 3
USE reqleave INDEX reqleave
DO WHILE UPPER(ansr) = 'Y'
   STORE '      ' TO sno
   DO screen1
   SET COLOR TO W+
   @  3,8 SAY 'MODIFY RECORDS (REQLEAVE FILE)'
   @  4,8 SAY '=============================='
   SET COLOR TO W
   @ 20,7 SAY 'ENTER SERIAL NUMBER ==)' GET sno,
   PICTURE '99999'
   READ
   @ 20,7 SAY '                                  '
   FIND &sno
   IF .NOT. EOF()
      * initialize memvars
      STORE '         ' TO req1, req2
      STORE 0 TO dur1, dur2
      * display choices
      STORE 0 TO response
      @  5,11 SAY 'FIELDS TO BE MODIFIED'
      @  6,11 SAY '====================='
      @  7,11 SAY 'REQUEST1 .......... 1'
      @  8,11 SAY 'REQ1DUR ........... 2'
      @  9,11 SAY 'REQUEST2 .......... 3'
      @ 10,11 SAY 'REQ2DUR ........... 4'
      @ 11,11 SAY 'REQUEST1 + DURATION 5'
      @ 12,11 SAY 'REQUEST2 + DURATION 6'
      @ 20,7  SAY 'ENTER FIELD NUMBER ==)' GET response,
      PICTURE '9' RANGE 1,6
      READ
```

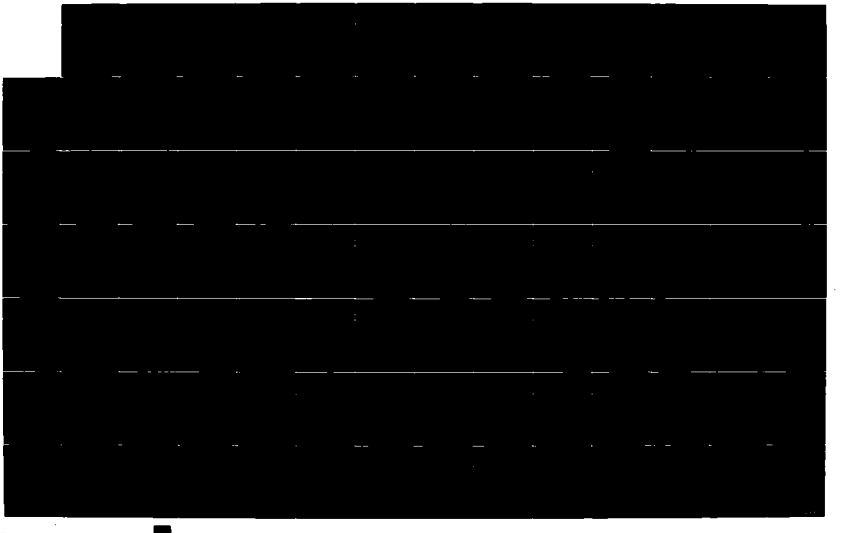
```
* clear screen
@  5,8 SAY '                                  '
@  6,8 SAY '                                  '
@  7,8 SAY '                                  '
@  8,8 SAY '                                  '
@  9,8 SAY '                                  '
@ 10,8 SAY '                                  '
@ 11,8 SAY '                                  '
@ 12,8 SAY '                                  '
@ 20,7 SAY '                                       '

DO CASE
   CASE response = 1
        @ 5,5 SAY 'REQUEST1      :' GET req1 ,
        PICTURE '99/99/99'
        READ
        @ 5,5 SAY '                                '
        REPLACE request1 WITH CTOD(req1)
   CASE response = 2
        @  6,5 SAY 'REQ1DUR      :' GET dur1 ,
        PICTURE '99'
        READ
        @  6,5 SAY '                               '
        REPLACE req1dur WITH dur1
   CASE response = 3
        @  9,5 SAY 'REQUEST2     :' GET req2 ,
        PICTURE '99/99/99'
        READ
        @  9,5 SAY '                               '
        REPLACE request2 WITH CTOD(req2)
   CASE response = 4
        @ 10,5 SAY 'REQ2DUR      :' GET dur2 ,
        PICTURE '99'
        READ
        @ 10,5 SAY '                               '
        REPLACE req2dur WITH dur2
   CASE response = 5
        @ 11,5 SAY 'REQUEST1     :' GET req1 ,
        PICTURE '99/99/99/'
        @ 12,5 SAY 'DURATION1    :' GET dur1 ,
        PICTURE '99'
        READ
        @ 11,5 SAY '                               '
        @ 12,5 SAY '                               '
        REPLACE request1 WITH CTOD(req1)
        REPLACE req1dur WITH dur1
   CASE response = 6
        @ 13,5 SAY 'REQUEST2     :' GET req2 ,
        PICTURE '99/99/99'
        @ 14,5 SAY 'DURATION2    :' GET dur2 ,
        PICTURE '99'
        READ
```

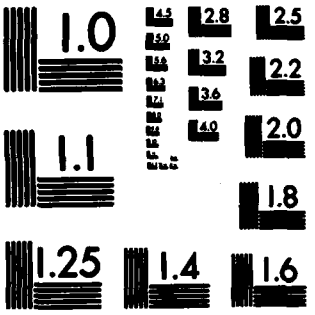
```
                @ 13,5 SAY '                                        '
                @ 14,5 SAY '                                        '
                REPLACE request2 WITH CTOD(req2)
                REPLACE req2dur WITH dur2
        ENDCASE
        STORE .T. TO done

        * Display modified record
        @  5,9 SAY 'SERIAL NUMBER      :' GET serno
        @  6,9 SAY 'REMAINING LEAVE    :' GET remleave
        @  7,9 SAY 'REQUEST1           :' GET request1
        @  8,9 SAY 'REQUEST1 DURATION  :' GET req1dur
        @  9,9 SAY 'REQUEST2           :' GET request2
        @ 10,9 SAY 'REQUEST2 DURATION  :' GET req2dur
    ELSE
        @ 20,7 SAY '      RECORD DOES NOT EXIST'
        DO delay
        @ 20,7 SAY '                                          '
    ENDIF
    CLEAR GETS
    @ 20,7 SAY 'MORE MODIFICATIONS? (Y/N) ==>' GET ansr
    READ
    CLEAR
ENDDO

* update SPY file
IF done
    SELECT 1
    GO TOP
    LOCATE FOR password = psw
    SELECT 2
    APPEND BLANK
    REPLACE date WITH DATE()
    REPLACE time WITH TIME()
    REPLACE username WITH A->username
    REPLACE jobdescr WITH 'MODIFICATION'
    REPLACE progname WITH 'REQLEAVE'
ENDIF

CLOSE DATABASES
DELETE FILE reqleave.ndx
RETURN
```

```
***  PROGRAM DELECREW

*  This program deletes records from CREWMEMB file,
*          as well as from REQLEAVE file.

CLEAR
STORE 'Y' TO ansr
STORE .F. TO done
USE crewmemb
INDEX ON SERNO TO crewmemb
USE reqleave
INDEX ON SERNO TO reqleave
SELECT 1
USE users
SELECT 2
USE spy
SELECT 3
USE reqleave INDEX reqleave
SELECT 4
USE statist
SELECT 5
USE crewmemb INDEX crewmemb

DO WHILE UPPER(ansr) = 'Y'
   CLEAR
   DO screen1
   SET COLOR TO W+
   @  3,9 SAY 'DELETE RECORD FROM CREWMEMB'
   @  4,9 SAY '=========================='
   SET COLOR TO W
   STORE '      ' TO sno

   @ 20,7 SAY 'ENTER SERIAL NUMBER ==)' GET sno ,
   PICTURE '99999'
   READ
   @ 20,7 SAY '                                   '
   FIND &sno
   IF .NOT. EOF()
      @  5,5 SAY 'NAME          :' GET name
      @  6,5 SAY 'RANK CODE     :' GET rank
      @  7,5 SAY 'SPEC. CODE    :' GET spec
      @  8,5 SAY 'ENROL. DATE   :' GET indate
      @  9,5 SAY 'DISENRL.DATE  :' GET outdate
      @  9,5 SAY 'ADDRESS       :' GET address
      @ 10,5 SAY 'PHONE         :' GET phone
      STORE ' ' TO ans
      CLEAR GETS
      @ 20,7 SAY 'DELETE? (Y/N) ==)' GET ans
      READ
```

AD-A171 401 IMPLEMENTATION OF A PERSONNEL DATABASE SYSTEM FOR CREW ALLOCATION AND REP..(U) NAVAL POSTGRADUATE SCHOOL MONTEREY CA C ANASTASATOS JUN 86 2/2

UNCLASSIFIED F/G 9/2 NL





```
         IF UPPER(ans) = 'Y'
            SELECT 4
            APPEND BLANK
            REPLACE serno   WITH E->serno
            REPLACE name    WITH E->name
            REPLACE rank    WITH E->rank
            REPLACE spec    WITH E->spec
            REPLACE indate  WITH E->indate
            REPLACE outdate WITH DATE()
            SELECT 5
            DELETE
            STORE .T. TO done

            SELECT 3
            FIND &sno
            IF .NOT. EOF()
               SET COLOR TO W+
               @ 12,9 SAY 'DELETE RECORD FROM REQLEAVE'
               SET COLOR TO W
               @ 14,5 SAY 'REMAINING LEAVE    :' GET remleave
               @ 15,5 SAY '1st LEAVE REQUEST :' GET request1
               @ 16,5 SAY '1st LEAVE DURATION:' GET req1dur
               @ 17,5 SAY '2nd LEAVE REQUEST :' GET request2
               @ 18,5 SAY '2nd LEAVE DURATION:' GET req2dur
               CLEAR GETS
            ENDIF
         ENDIF
      ELSE
         @ 20,7 SAY 'RECORD DOES NOT EXIST'
         DO delay
         @ 20,7 SAY '                                    '
      ENDIF
      @ 20,7 SAY 'MORE DELETIONS? (Y/N) ==>' GET ansr
      READ
      SELECT 5
   ENDDO

   IF done
      SELECT 5
      PACK
      SELECT 4
      PACK
```

```
    * update SPY file
    SELECT 1
    GO TOP
    LOCATE FOR password = psw
    SELECT 2
    APPEND BLANK
    REPLACE date WITH DATE()
    REPLACE time WITH TIME()
    REPLACE username WITH A->username
    REPLACE jobdescr WITH 'DELETION'
    REPLACE progname WITH 'DELECREW'
ENDIF

CLOSE DATABASES
DELETE FILE crewmemb.ndx
DELETE FILE reqleave.ndx
RETURN
```

C. PROGRAMS SUPPORTING THE CREW ALLOCATION

```
*** PROGRAM ALLOCATE

* This program allocate the ship crew into 2 or 3 shifts
* and performs the ship manning according to alert type.

CLEAR
STORE ' ' TO allcont
PUBLIC allcode
DO WHILE UPPER(allcont) # 'N'
      DO submenu2
      DO CASE
         CASE allcode = 0
              STORE 'N' TO allcont
         CASE allcode = 1
              DO genalert
         CASE allcode = 2
              DO surfalert
         CASE allcode = 3
              DO airalert
         CASE allcode = 4
              DO shift2
         CASE allcode = 5
              DO shift3
      ENDCASE
ENDDO
RETURN
```

```
*** PROGRAM SUBMENU2

CLEAR
PUBLIC allcode
STORE 0 TO allcode
@  7,14 SAY 'IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM,'
@  8,14 SAY ':                    SUBMENU 2                          :'
@  9,14 SAY ':                    MMMMMMMMM                          :'
@ 10,14 SAY ':                                                       :'
@ 11,14 SAY ':  EXIT TO MAIN MENU ..................... 0   :'
@ 12,14 SAY ':  CREW ALLOCATION FOR GENERAL ALERT ..... 1   :'
@ 13,14 SAY ':  CREW ALLOCATION FOR SURFACE ALERT ..... 2   :'
@ 14,14 SAY ':  CREW ALLOCATION FOR AIR ALERT ......... 3   :'
@ 15,14 SAY ':  CREW ALLOCATION INTO 2 SHIFTS ......... 4   :'
@ 16,14 SAY ':  CREW ALLOCATION INTO 3 SHIFTS ......... 5   :'
@ 17,14 SAY 'HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<'
SET COLOR TO W+
@ 19,26 SAY 'ENTER YOUR SELECTION ==>' ,
GET allcode PICTURE '9' RANGE 0,5
READ
SET COLOR TO W
RETURN
```

```
*** PROGRAM GENALERT

* This program performs the ship manning for general alert

CLEAR
DO screen2
@  9,29 SAY 'AUXILIARY FILE CREATION'
COPY FILE crewmemb.dbf TO tmpcrew.dbf
@ 11,29 SAY '        TMPCREW'
COPY FILE alert.dbf TO tmpalert.dbf
@ 12,29 SAY '        TMPALERT'

* open required files
SELECT 1
USE users
SELECT 2
USE spy
SELECT 3
USE galert
DELETE NEXT 100
PACK
SELECT 4
USE tmpcrew
SELECT 5
USE tmpalert
STORE .F. TO finish
STORE .T. TO done
@  9,25 SAY '                                '
@ 10,25 SAY '                                '
@ 11,25 SAY '                                '
SET COLOR TO W*
@ 12,25 SAY '     PROCESSING IN PROGRESS'
SET COLOR TO W
DO WHILE  .NOT. EOF()
   STORE .F. TO ok
   SELECT 4
   GO TOP
   LOCATE FOR rank = E->reqrank .AND. spec = E->reqspec ,
          .AND. .NOT. DELETED()
   IF .NOT. EOF()
      DELETE
      SELECT 3
      APPEND BLANK
      REPLACE rank WITH D->rank
      REPLACE name WITH D->name
      REPLACE spec WITH D->spec
      REPLACE poscode WITH E->poscode
      REPLACE descr WITH E->descr
      STORE .T. TO ok
   ELSE
      STORE .F. TO done
   ENDIF
```

```
   SELECT 5
   IF ok
      DELETE
   ENDIF
   SKIP
ENDDO
@ 12,25 SAY '                                '
*
IF .NOT. done
   STORE ' ' TO ansr
   @ 19,26 CLEAR
   @ 19,26 SAY 'SOME POSITIONS REMAIN UNMANNED'
   @ 20,26 SAY 'DUE TO NOT EXACT MATCH  OF THE'
   @ 21,26 SAY '       RANK OR SPECIALTY'
   @ 23,23 SAY 'IGNORE RANK AND CONTINUE? (Y/N) ==)' GET ansr
   READ
   @ 19,23 CLEAR
   IF UPPER(ansr) = 'Y'
      SELECT 5
      GO TOP
      STORE .T. TO done
      SET COLOR TO W*
      @ 12,25 SAY '    PROCESSING IN PROGRESS'
      SET COLOR TO W
      DO WHILE .NOT. EOF()
         STORE .F. TO ok
         IF .NOT. DELETED()
            SELECT 4
            GO TOP
            LOCATE FOR spec = E->reqspec .AND. .NOT. DELETED()
            IF .NOT. EOF()
               DELETE
               SELECT 3
               APPEND BLANK
               REPLACE rank WITH D->rank
               REPLACE name WITH D->name
               REPLACE spec WITH D->spec
               REPLACE poscode WITH E->poscode
               REPLACE descr WITH E->descr
               STORE .T. TO ok
            ELSE
               STORE .F. TO done
            ENDIF
         ENDIF
         SELECT 5
         IF ok
            DELETE
         ENDIF
         SKIP
      ENDDO
      @ 12,25 SAY '                                '
```

```
   ELSE
      STORE .T. TO finish
   ENDIF
ENDIF
*
IF .NOT. finish
   IF .NOT. done
      STORE ' ' TO ansr
      @ 19,23 CLEAR
      @ 19,23 SAY 'SOME POSITIONS STILL REMAIN UNMANNED'
      @ 20,23 SAY 'DUE TO NOT EXACT MATCH OF THE  FIELD'
      @ 21,23 SAY '                SPECIALTY'
      @ 23,23 SAY 'IGNORE SPECIALTY AND CONTINUE? (Y/N) ==>',
      GET ansr
      READ
      @ 19,23 CLEAR
      IF UPPER(ansr) = 'Y'
         STORE .T. TO done
         SET COLOR TO W*
         @ 12,25 SAY '    PROCESSING IN PROGRESS'
         SET COLOR TO W
         SELECT 5
         GO TOP
         DO WHILE .NOT. EOF()
            STORE .F. TO ok
            IF .NOT. DELETED()
               SELECT 4
               GO TOP
               LOCATE FOR .NOT. DELETED()
               IF .NOT. EOF()
                  DELETE
                  SELECT 3
                  APPEND BLANK
                  REPLACE rank WITH D->rank
                  REPLACE name WITH D->name
                  REPLACE spec WITH D->spec
                  REPLACE poscode WITH E->poscode
                  REPLACE descr WITH E->descr
                  STORE .T. TO ok
               ELSE
                  STORE .F. TO done
               ENDIF
            ENDIF
            SELECT 5
            IF ok
               DELETE
            ENDIF
            SKIP
         ENDDO
         @ 12,25 SAY '                              '
```

```
      ELSE
         STORE .T. TO finish
      ENDIF
   ENDIF
ENDIF
*
SELECT 4
LOCATE FOR .NOT. DELETED()
IF .NOT. EOF()
   STORE ' ' TO ansr
   @ 19,23 CLEAR
   @ 19,23 SAY 'THERE IS STILL AVAILABLE PERSONNEL'
   @ 20,23 SAY 'DO YOU WANT TO SEE THEM? (Y/N) ==>' GET ansr
   READ
   IF UPPER(ansr) = 'Y'
      CLEAR
      GO TOP
      LOCATE FOR .NOT. DELETED()
      DO WHILE .NOT. EOF()
         DISPLAY serno, name, rank, spec FOR .NOT. DELETED()
         DO delay1
         CONTINUE
      ENDDO
   ENDIF
ENDIF
* update SPY file
SELECT 1
GO TOP
LOCATE FOR password = psw
SELECT 2
APPEND BLANK
REPLACE date WITH DATE()
REPLACE time WITH TIME()
REPLACE username WITH A->username
REPLACE jobdescr WITH 'ALLOCATION'
REPLACE progname WITH 'GENALERT'

CLOSE DATABASES
DELETE FILE tmpcrew.dbf
DELETE FILE tmpalert.dbf
RETURN
```

```
*** PROGRAM SURFALERT

* This program performs the ship manning for surface alert

CLEAR
DO screen2
@  9,29 SAY 'AUXILIARY FILE CREATION'
COPY FILE crewmemb.dbf TO tmpcrew.dbf
@ 11,29 SAY '        TMPCREW'
COPY FILE alert.dbf TO tmpalert.dbf
* delete the positions that are not necessary to be manned
USE tmpalert
DELETE FOR UPPER(descr) = 'GUN 41 CONTROL'
DELETE FOR UPPER(descr) = 'GUN 42 CONTROL'
DELETE FOR UPPER(descr) = 'A/A MISS CONTR'
DELETE FOR UPPER(descr) = 'A/A MISS TELEPH'
DELETE FOR UPPER(descr) = 'A/A MISSILES 1'
DELETE FOR UPPER(descr) = 'A/A MISSILES 2'
PACK
@ 12,29 SAY '        TMPALERT'

* open required files
SELECT 1
USE users
SELECT 2
USE spy
SELECT 3
USE salert
DELETE NEXT 100
PACK
SELECT 4
USE tmpcrew
SELECT 5
USE tmpalert
STORE .F. TO finish
STORE .T. TO done
@  9,25 SAY '                                    '
@ 10,25 SAY '                                    '
@ 11,25 SAY '                                    '
SET COLOR TO W*
@ 12,25 SAY '     PROCESSING IN PROGRESS'
SET COLOR TO W
DO WHILE  .NOT. EOF()
   STORE .F. TO ok
   SELECT 4
   GO TOP
   LOCATE FOR rank = E->reqrank .AND. spec = E->reqspec ,
          .AND. .NOT. DELETED()
```

```
    IF .NOT. EOF()
       DELETE
       SELECT 3
       APPEND BLANK
       REPLACE rank WITH D->rank
       REPLACE name WITH D->name
       REPLACE spec WITH D->spec
       REPLACE poscode WITH E->poscode
       REPLACE descr WITH E->descr
       STORE .T. TO ok
    ELSE
       STORE .F. TO done
    ENDIF
    SELECT 5
    IF ok
       DELETE
    ENDIF
    SKIP
ENDDO
@ 12,25 SAY '                              '
IF .NOT. done
   STORE ' ' TO ansr
   @ 19,26 CLEAR
   @ 19,26 SAY 'SOME POSITIONS REMAIN UNMANNED'
   @ 20,26 SAY 'DUE TO NOT EXACT MATCH  OF THE'
   @ 21,26 SAY '       RANK OR SPECIALTY'
   @ 23,23 SAY 'IGNORE RANK AND CONTINUE? (Y/N) ==>' GET ansr
   READ
   @ 19,23 CLEAR
   IF UPPER(ansr) = 'Y'
      SELECT 5
      GO TOP
      STORE .T. TO done
      SET COLOR TO W*
      @ 12,25 SAY '     PROCESSING IN PROGRESS'
      SET COLOR TO W
      DO WHILE .NOT. EOF()
         STORE .F. TO ok
         IF .NOT. DELETED()
            SELECT 4
            GO TOP
            LOCATE FOR spec = E->reqspec .AND. .NOT. DELETED()
            IF .NOT. EOF()
               DELETE
               SELECT 3
               APPEND BLANK
               REPLACE rank WITH D->rank
               REPLACE name WITH D->name
               REPLACE spec WITH D->spec
               REPLACE poscode WITH E->poscode
               REPLACE descr WITH E->descr
               STORE .T. TO ok
```

```
            ELSE
               STORE .F. TO done
            ENDIF
         ENDIF
         SELECT 5
         IF ok
            DELETE
         ENDIF
         SKIP
      ENDDO
      @ 12,25 SAY '                              '
   ELSE
      STORE .T. TO finish
   ENDIF
ENDIF
*
IF .NOT. finish
   IF .NOT. done
      STORE ' ' TO ansr
      @ 19,23 CLEAR
      @ 19,23 SAY 'SOME POSITIONS STILL REMAIN UNMANNED'
      @ 20,23 SAY 'DUE TO NOT EXACT MATCH OF THE  FIELD'
      @ 21,23 SAY '                SPECIALTY'
      @ 23,23 SAY 'IGNORE SPECIALTY AND CONTINUE? (Y/N) ==>'
GET ansr
      READ
      @ 19,23 CLEAR
      IF UPPER(ansr) = 'Y'
         STORE .T. TO done
         SET COLOR TO W*
         @ 12,25 SAY '    PROCESSING IN PROGRESS'
         SET COLOR TO W
         SELECT 5
         GO TOP
         DO WHILE .NOT. EOF()
            STORE .F. TO ok
            IF .NOT. DELETED()
               SELECT 4
               GO TOP
               LOCATE FOR .NOT. DELETED()
               IF .NOT. EOF()
                  DELETE
                  SELECT 3
                  APPEND BLANK
                  REPLACE rank WITH D->rank
                  REPLACE name WITH D->name
                  REPLACE spec WITH D->spec
                  REPLACE poscode WITH E->poscode
                  REPLACE descr WITH E->descr
                  STORE .T. TO ok
```

```
                  ELSE
                     STORE .F. TO done
                  ENDIF
               ENDIF
               SELECT 5
               IF ok
                  DELETE
               ENDIF
               SKIP
            ENDDO
            @ 12,25 SAY '                                    '
         ELSE
            STORE .T. TO finish
         ENDIF
      ENDIF
   ENDIF
*
SELECT 4
LOCATE FOR .NOT. DELETED()
IF .NOT. EOF()
   STORE ' ' TO ansr
   @ 19,23 CLEAR
   @ 19,23 SAY 'THERE IS STILL AVAILABLE PERSONNEL'
   @ 20,23 SAY 'DO YOU WANT TO SEE THEM? (Y/N) ==)' GET ansr
   READ
   IF UPPER(ansr) = 'Y'
      CLEAR
      GO TOP
      LOCATE FOR .NOT. DELETED()
      DO WHILE .NOT. EOF()
         DISPLAY serno, name, rank, spec FOR .NOT. DELETED()
         DO delay1
         CONTINUE
      ENDDO
   ENDIF
ENDIF
* update SPY file
SELECT 1
GO TOP
LOCATE FOR password = psw
SELECT 2
APPEND BLANK
REPLACE date WITH DATE()
REPLACE time WITH TIME()
REPLACE username WITH A->username
REPLACE jobdescr WITH 'ALLOCATION'
REPLACE progname WITH 'SURFALERT'

CLOSE DATABASES
DELETE FILE tmpcrew.dbf
DELETE FILE tmpalert.dbf
RETURN
```

```
*** PROGRAM AIRALERT

* This program performs the ship manning for air alert

CLEAR
DO screen2
@  9,29 SAY 'AUXILIARY FILE CREATION'
COPY FILE crewmemb.dbf TO tmpcrew.dbf
@ 11,29 SAY '        TMPCREW'
COPY FILE alert.dbf TO tmpalert.dbf
* delete the positions that are not necessary to be manned
USE tmpalert
DELETE FOR UPPER(descr) = 'TORPEDO TUBE 1'
DELETE FOR UPPER(descr) = 'TORPEDO TUBE 2'
DELETE FOR UPPER(descr) = 'SS MISS CONTR'
DELETE FOR UPPER(descr) = 'SS MISS TELEPH'
DELETE FOR UPPER(descr) = 'SS MISSILES 1'
DELETE FOR UPPER(descr) = 'SS MISSILES 2'
PACK
@ 12,29 SAY '        TMPALERT'

* open required files
SELECT 1
USE users
SELECT 2
USE spy
SELECT 3
USE aalert
DELETE NEXT 100
PACK
SELECT 4
USE tmpcrew
SELECT 5
USE tmpalert
STORE .F. TO finish
STORE .T. TO done
@  9,25 SAY '                                '
@ 10,25 SAY '                                '
@ 11,25 SAY '                                '
SET COLOR TO W*
@ 12,25 SAY '    PROCESSING IN PROGRESS'
SET COLOR TO W
DO WHILE  .NOT. EOF()
   STORE .F. TO ok
   SELECT 4
   GO TOP
   LOCATE FOR rank = E->reqrank .AND. spec = E->reqspec ,
          .AND. .NOT. DELETED()
```

```
      IF .NOT. EOF()
         DELETE
         SELECT 3
         APPEND BLANK
         REPLACE rank WITH D->rank
         REPLACE name WITH D->name
         REPLACE spec WITH D->spec
         REPLACE poscode WITH E->poscode
         REPLACE descr WITH E->descr
         STORE .T. TO ok
      ELSE
         STORE .F. TO done
      ENDIF
      SELECT 5
      IF ok
         DELETE
      ENDIF
      SKIP
   ENDDO
   @ 12,25 SAY '                                '
   IF .NOT. done
      STORE ' ' TO ansr
      @ 19,26 CLEAR
      @ 19,26 SAY 'SOME POSITIONS REMAIN UNMANNED'
      @ 20,26 SAY 'DUE TO NOT EXACT MATCH  OF THE'
      @ 21,26 SAY '       RANK OR SPECIALTY'
      @ 23,23 SAY 'IGNORE RANK AND CONTINUE? (Y/N) ==)' GET ansr
      READ
      @ 19,23 CLEAR
      IF UPPER(ansr) = 'Y'
         SELECT 5
         GO TOP
         STORE .T. TO done
         SET COLOR TO W*
         @ 12,25 SAY '    PROCESSING IN PROGRESS'
         SET COLOR TO W
         DO WHILE .NOT. EOF()
            STORE .F. TO ok
            IF .NOT. DELETED()
               SELECT 4
               GO TOP
               LOCATE FOR spec = E->reqspec .AND. .NOT. DELETED()
               IF .NOT. EOF()
                  DELETE
                  SELECT 3
                  APPEND BLANK
                  REPLACE rank WITH D->rank
                  REPLACE name WITH D->name
                  REPLACE spec WITH D->spec
                  REPLACE poscode WITH E->poscode
                  REPLACE descr WITH E->descr
                  STORE .T. TO ok
```

```
                ELSE
                   STORE .F. TO done
                ENDIF
             ENDIF
             SELECT 5
             IF ok
                DELETE
             ENDIF
             SKIP
          ENDDO
          @ 12,25 SAY '                                '
       ELSE
          STORE .T. TO finish
       ENDIF
    ENDIF
    *
    IF .NOT. finish
       IF .NOT. done
          STORE ' ' TO ansr
          @ 19,23 CLEAR
          @ 19,23 SAY 'SOME POSITIONS STILL REMAIN UNMANNED'
          @ 20,23 SAY 'DUE TO NOT EXACT MATCH OF THE  FIELD'
          @ 21,23 SAY '                SPECIALTY'
          @ 23,23 SAY 'IGNORE SPECIALTY AND CONTINUE? (Y/N) ==>'.
          GET ansr
          READ
          @ 19,23 CLEAR
          IF UPPER(ansr) = 'Y'
             STORE .T. TO done
             SET COLOR TO W*
             @ 12,25 SAY '     PROCESSING IN PROGRESS'
             SET COLOR TO W
             SELECT 5
             GO TOP
             DO WHILE .NOT. EOF()
                STORE .F. TO ok
                IF .NOT. DELETED()
                   SELECT 4
                   GO TOP
                   LOCATE FOR .NOT. DELETED()
                   IF .NOT. EOF()
                      DELETE
                      SELECT 3
                      APPEND BLANK
                      REPLACE rank WITH D->rank
                      REPLACE name WITH D->name
                      REPLACE spec WITH D->spec
                      REPLACE poscode WITH E->poscode
                      REPLACE descr WITH E->descr
                      STORE .T. TO ok
```

```
                  ELSE
                     STORE .F. TO done
                  ENDIF
               ENDIF
               SELECT 5
               IF ok
                  DELETE
               ENDIF
               SKIP
            ENDDO
            @ 12,25 SAY '                                    '
         ELSE
            STORE .T. TO finish
         ENDIF
      ENDIF
   ENDIF
   *
   SELECT 4
   LOCATE FOR .NOT. DELETED()
   IF .NOT. EOF()
      STORE ' ' TO ansr
      @ 19,23 CLEAR
      @ 19,23 SAY 'THERE IS STILL AVAILABLE PERSONNEL'
      @ 20,23 SAY 'DO YOU WANT TO SEE THEM? (Y/N) ==)' GET ansr
      READ
      IF UPPER(ansr) = 'Y'
         CLEAR
         GO TOP
         LOCATE FOR .NOT. DELETED()
         DO WHILE .NOT. EOF()
            DISPLAY serno, name, rank, spec FOR .NOT. DELETED()
            DO delay1
            CONTINUE
         ENDDO
      ENDIF
   ENDIF
   * update SPY file
   SELECT 1
   GO TOP
   LOCATE FOR password = psw
   SELECT 2
   APPEND BLANK
   REPLACE date WITH DATE()
   REPLACE time WITH TIME()
   REPLACE username WITH A-)username
   REPLACE jobdescr WITH 'ALLOCATION'
   REPLACE progname WITH 'AIRALERT'

   CLOSE DATABASES
   DELETE FILE tmpcrew.dbf
   DELETE FILE tmpalert.dbf
   RETURN
```

```
***  PROGRAM SCREEN2

@  8,24 SAY 'IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM,'
@  9,24 SAY ':                                :'
@ 10,24 SAY ':  MMMMMMMMMMMMMMMMMMMMMMMMMMM   :'
@ 11,24 SAY ':                                :'
@ 12,24 SAY ':                                :'
@ 13,24 SAY ':                                :'
@ 14,24 SAY ':                                :'
@ 15,24 SAY ':                                :'
@ 16,24 SAY ':                                :'
@ 17,24 SAY 'HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<'
RETURN
```

```
*** PROGRAM DELAY1

STORE 0 TO d
DO WHILE d < 10
   STORE d + 1 TO d
ENDDO
RETURN
```

```
*** PROGRAM SHIFT2

*.   This program performs the crew allocation
*                  into two shifts

CLEAR
DO screen2
@  9,29 SAY 'AUXILIARY FILE CREATION'
COPY FILE crewmemb.dbf TO tmpshift.dbf
USE tmpshift
INDEX ON SPEC+RANK TO tmpshift
@ 11,29 SAY '         TMPSHIFT'

* open the required files
SELECT 1
USE users
SELECT 2
USE spy
SELECT 3
USE shift2a
DELETE NEXT 100
PACK
SELECT 4
USE shift2b
DELETE NEXT 100
PACK
SELECT 5
USE tmpshift INDEX tmpshift
@  9,25 SAY '                                '
@ 10,25 SAY '                                '
@ 11,25 SAY '                                '
SET COLOR TO W*
@ 12,25 SAY '     PROCESSING IN PROGRESS'
STORE 0 TO count1
STORE 0 TO count2
STORE .T. TO contin
SET COLOR TO W
SELECT 5
GO TOP
DO WHILE contin
   IF EOF()
      STORE .F. TO contin
   ELSE
      SELECT 3
      APPEND BLANK
      REPLACE rank WITH E->rank
      REPLACE name WITH E->name
      REPLACE spec WITH E->spec
      STORE count1 + 1 TO count1
      SELECT 5
      SKIP
```

```
      IF EOF()
         STORE .F. TO contin
      ELSE
         SELECT 4
         APPEND BLANK
         REPLACE rank WITH E->rank
         REPLACE name WITH E->name
         REPLACE spec WITH E->spec
         STORE count2 + 1 TO count2
         SELECT 5
         SKIP
      ENDIF
   ENDIF
ENDDO
CLEAR
STORE ' ' TO ans
@ 19,23 SAY 'THE TWO SHIFTS ARE READY'
@ 20,23 SAY 'DO YOU WANT TO SEE THEM? (Y/N) ==>' GET ans
READ
IF UPPER(ans) = 'Y'
   STORE .F. TO fin
   STORE 0 TO ch
   DO WHILE .NOT. fin
      DO screen2
      @  9,34 SAY 'YOUR CHOICE :'
      @ 12,30 SAY 'SHIFT A ......... 1'
      @ 13,30 SAY 'SHIFT B ......... 2'
      @ 14,30 SAY 'SHIFT A AND B ... 3'
      @ 15,30 SAY 'EXIT ............ 4'
      @ 18,10 CLEAR
      @ 20,28 SAY 'ENTER YOUR CHOICE ==>' GET ch ,
      PICTURE '9' RANGE 1,4
      READ
      DO CASE
         CASE ch = 1
              CLEAR
              SELECT 3
              GO TOP
              DO WHILE .NOT. EOF()
                 DISPLAY rank, name, spec
                 DO delay1
                 SKIP
              ENDDO
         CASE ch = 2
              CLEAR
              SELECT 4
              GO TOP
              DO WHILE .NOT. EOF()
                 DISPLAY rank, name, spec
                 DO delay1
                    SKIP
                 ENDDO
```

```
            CASE ch = 3
                 CLEAR
                 SELECT 3
                 GO TOP
                 DO WHILE .NOT. EOF()
                    DISPLAY rank, name, spec
                    DO delay1
                    SKIP
                 ENDDO

                 CLEAR
                 SELECT 4
                 GO TOP
                 DO WHILE .NOT. EOF()
                    DISPLAY rank, name, spec
                    DO delay1
                    SKIP
                 ENDDO
            CASE ch = 4
                 STORE .T. TO fin
         ENDCASE
         CLEAR
         IF .NOT. fin
            STORE ' ' TO res
            @ 20,18 SAY 'DO YOU WANT TO SEE ANY ONE OF THE'
            @ 21,18 SAY '          SHIFTS AGAIN? (Y/N) ==>' GET res
            READ
            IF UPPER(res) # 'Y'
               STORE .T. TO fin
            ENDIF
         ENDIF
      ENDDO
ENDIF

* update SPY file
SELECT 1
GO TOP
LOCATE FOR password = psw
SELECT 2
APPEND BLANK
REPLACE date WITH DATE()
REPLACE time WITH TIME()
REPLACE username WITH A->username
REPLACE jobdescr WITH 'ALLOCATION'
REPLACE progname WITH 'SHIFT2'

CLEAR
CLOSE DATABASES
DELETE FILE tmpshift.dbf
DELETE FILE tmpshift.ndx
RETURN
```

```
*** PROGRAM SHIFT3

*    This program performs the crew allocation
*                    into three shifts

CLEAR
DO screen2
@  9,29 SAY 'AUXILIARY FILE CREATION'
COPY FILE crewmemb.dbf TO tmpshift.dbf
USE tmpshift
INDEX ON SPEC+RANK TO tmpshift
@ 11,29 SAY '         TMPSHIFT'
* open the required files
SELECT 1
USE users
SELECT 2
USE spy
SELECT 3
USE shift3a
DELETE NEXT 100
PACK
SELECT 4
USE shift3b
DELETE NEXT 100
PACK
SELECT 5
USE shift3c
DELETE NEXT 100
PACK
SELECT 6
USE tmpshift INDEX tmpshift
@  9,25 SAY '                                ,
@ 10,25 SAY '                                ,
@ 11,25 SAY '                                ,
SET COLOR TO W*
@ 12,25 SAY '     PROCESSING IN PROGRESS'
STORE 0 TO count1
STORE 0 TO count2
STORE 0 TO count3
STORE .T. TO contin
SET COLOR TO W
SELECT 6
GO TOP
```

```
DO WHILE contin
   IF EOF()
      STORE .F. TO contin
   ELSE
      SELECT 3
      APPEND BLANK
      REPLACE rank WITH F->rank
      REPLACE name WITH F->name
      REPLACE spec WITH F->spec
      STORE count1 + 1 TO count1
      SELECT 6
      SKIP

      IF EOF()
         STORE .F. TO contin
      ELSE
         SELECT 4
         APPEND BLANK
         REPLACE rank WITH F->rank
         REPLACE name WITH F->name
         REPLACE spec WITH F->spec
         STORE count2 + 1 TO count2
         SELECT 6
         SKIP
      ENDIF

      IF EOF()
         STORE .F. TO contin
      ELSE
         SELECT 5
         APPEND BLANK
         REPLACE rank WITH F->rank
         REPLACE name WITH F->name
         REPLACE spec WITH F->spec
         STORE count3 + 1 TO count3
         SELECT 6
         SKIP
      ENDIF

   ENDIF
ENDDO
CLEAR
STORE ' ' TO ans
@ 19,23 SAY 'THE THREE SHIFTS ARE READY'
@ 20,23 SAY 'DO YOU WANT TO SEE THEM? (Y/N) ==)' GET ans
READ
```

```
IF UPPER(ans) = 'Y'
   STORE .F. TO fin
   STORE 0 TO ch
   DO WHILE .NOT. fin
      DO screen2
      @  9,34 SAY 'YOUR CHOICE :'
      @ 12,30 SAY 'SHIFT A ..... 1'
      @ 13,30 SAY 'SHIFT B ..... 2'
      @ 14,30 SAY 'SHIFT C ..... 3'
      @ 15,30 SAY 'EXIT ........... 4'
      @ 18,10 CLEAR
      @ 20,28 SAY 'ENTER YOUR CHOICE ==>' GET ch ,
      PICTURE '9' RANGE 1,4
      READ
      DO CASE
         CASE ch = 1
              CLEAR
              SELECT 3
              GO TOP
              DO WHILE .NOT. EOF()
                 DISPLAY rank, name, spec
                 DO delay1
                 SKIP
              ENDDO
         CASE ch = 2
              CLEAR
              SELECT 4
              GO TOP
              DO WHILE .NOT. EOF()
                 DISPLAY rank, name, spec
                 DO delay1
                    SKIP
                 ENDDO
         CASE ch = 3
              CLEAR
              SELECT 5
              GO TOP
              DO WHILE .NOT. EOF()
                 DISPLAY rank, name, spec
                 DO delay1
                 SKIP
              ENDDO

         CASE ch = 4
              STORE .T. TO fin
      ENDCASE
      CLEAR
```

```
      IF .NOT. fin
         STORE ' ' TO res
         @ 20,18 SAY 'DO YOU WANT TO SEE ANY ONE OF THE'
         @ 21,18 SAY '       SHIFTS AGAIN? (Y/N) ==>' GET res
         READ
         IF UPPER(res) # 'Y'
            STORE .T. TO fin
         ENDIF
      ENDIF
   ENDDO
ENDIF

* update SPY file
SELECT 1
GO TOP
LOCATE FOR password = psw
SELECT 2
APPEND BLANK
REPLACE date WITH DATE()
REPLACE time WITH TIME()
REPLACE username WITH A->username
REPLACE jobdescr WITH 'ALLOCATION'
REPLACE progname WITH 'SHIFT3'

CLEAR
CLOSE DATABASES
DELETE FILE tmpshift.dbf
DELETE FILE tmpshift.ndx
RETURN
```

D. PROGRAMS PRODUCING THE REQUIRED LISTS

```
*** PROGRAM  REPORTER
* displays on the screen or prints
*  a number of lists according to
*          user's requests

CLEAR
STORE .F. TO stop
PUBLIC rcode
DO WHILE .NOT. stop
   DO submenu4
   DO CASE
      CASE rcode = 0
           RETURN
      CASE rcode = 1
           DO list1
      CASE rcode = 2
           DO list2
      CASE rcode = 3
           DO list3
      CASE rcode = 4
           DO list4
      CASE rcode = 5
           DO list5
      CASE rcode = 6
           DO list6
      CASE rcode = 7
           DO list7
      CASE rcode = 8
           DO list8
      CASE rcode = 9
           DO list9
   ENDCASE
ENDDO
RETURN
```

```
*** PROGRAM SUBMENU3

CLEAR
PUBLIC rcode
STORE 0 TO rcode
@  5,14 SAY 'IMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM.'
@  6,14 SAY ':                    SUBMENU 3                              :'
@  7,14 SAY ':                    MMMMMMMMM                              :'
@  8,14 SAY ':                                                           :'
@  9,14 SAY ':  EXIT TO MAIN MENU ..................... 0   :'
@ 10,14 SAY ':  LIST OF CREW IN SOME ORDER ............. 1   :'
@ 11,14 SAY ':  LIST OF REQUESTED INFO OF CREW ......... 2   :'
@ 12,14 SAY ':  LIST OF CREW OF A REQUESTED DEPARTMENT.. 3   :'
@ 13,14 SAY ':  LIST OF CREW OF A REQUESTED SUBDEPARTMENT4   :'
@ 14,14 SAY ':  LIST OF CREW ALLOCATED INTO 2 SHIFTS ....5   :'
@ 15,14 SAY ':  LIST OF CREW ALLOCATED INTO 3 SHIFTS ....6   :'
@ 16,14 SAY ':  SHIP ORGANIZATION DURING SURFACE ALERT ..7   :'
@ 17,14 SAY ':  SHIP ORGANIZATION DURING AIR ALERT ......8   :'
@ 18,14 SAY ':  SHIP ORGANIZATION DURING GENERAL ALERT ..9   :'
@ 19,14 SAY 'HMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM<'
SET COLOR TO W+
@ 21,26 SAY 'ENTER YOUR SELECTION ==>' ,
GET rcode PICTURE '9' RANGE 0,9
READ
SET COLOR TO W
RETURN
```

```
*** PROGRAM LIST1

CLEAR
USE crewmemb
INDEX ON rank TO crewmemb
DO screen2
@  9,29 SAY 'AUXILIARY FILE CREATION'
STORE .T. TO again
SELECT 1
USE ranks
SELECT 2
USE specialt
SELECT 3
USE ordcrew
GO TOP
DELETE NEXT 100
PACK
SELECT 4
USE crewmemb INDEX crewmemb
GO TOP
DO WHILE again
   IF EOF()
     STORE .F. TO again
   ELSE
      SELECT 1
      GO TOP
      LOCATE FOR rankcode = D->rank
      SELECT 2
      GO TOP
      LOCATE FOR speccode = D->spec
      SELECT 3
      APPEND BLANK
      REPLACE serno   WITH D->serno
      REPLACE name    WITH D->name
      REPLACE indate  WITH D->indate
      REPLACE outdate WITH D->outdate
      REPLACE rank    WITH A->rankname
      REPLACE spec    WITH B->specname
      SELECT 4
      SKIP
   ENDIF
ENDDO
STORE .F. TO printer
STORE ' ' TO ans
CLOSE DATABASES
DELETE FILE crewmemb.ndx
```

```
DO WHILE UPPER(ans) # 'N'
   SELECT 3
   USE ordcrew
   STORE .F. TO a
   STORE .F. TO b
   STORE .F. TO c
   STORE .F. TO d
   DO screen2
   @  9,34 SAY 'YOUR CHOICE'
   @ 12,28 SAY 'LIST(S) ON SCREEN  :  1'
   @ 13,28 SAY 'LIST(S) ON PRINTER :  2'
   @ 18,23 CLEAR
   STORE 0 TO resp
   @ 20,28 SAY 'ENTER YOUR CHOICE ==>' GET resp ,
   PICTURE '9' RANGE 1,2
   READ
   IF resp = 2
      STORE .T. TO printer
      @ 20,28 SAY 'PUT YOUR PRINTER ON   '
      DO delay
   ENDIF
   @ 12,28 SAY 'SORTED ON NAMES     :  1'
   @ 13,28 SAY 'SORTED ON RANKS     :  2'
   @ 14,28 SAY 'SORTED ON INDATE    :  3'
   @ 15,28 SAY 'SORTED ON OUTDATE   :  4'
   @ 18,23 CLEAR
   STORE 0 TO resp
   @ 20,28 SAY 'ENTER YOUR CHOICE ==>' GET resp ,
   PICTURE '9' RANGE 1,4
   READ

   IF resp = 1
      STORE .T. TO a
      INDEX ON name TO ordcrew
   ELSE
      IF resp = 2
         STORE .T. TO b
      ELSE
         IF resp =3
            STORE .T. TO c
            INDEX ON indate TO ordcrew
         ELSE
            IF resp = 4
               STORE .T. TO d
               INDEX ON outdate TO ordcrew
            ENDIF
         ENDIF
      ENDIF
   ENDIF
```

```
SELECT 3
IF printer
   SET PRINT ON
   IF a
      REPORT FORM lst1a
   ELSE
      IF b
         REPORT FORM lst1b
      ELSE
         IF c
            REPORT FORM lst1c
         ELSE
            IF d
               REPORT FORM lst1d
            ENDIF
         ENDIF
      ENDIF
   ENDIF
   SET PRINT OFF
ELSE
   CLEAR
   GO TOP
   IF a
      DO WHILE .NOT. EOF()
         DISPLAY name, rank,spec
         DO delay1
        SKIP
      ENDDO
   ELSE
      IF b
         DO WHILE .NOT. EOF()
            DISPLAY rank, spec, name
            DO delay1
            SKIP
         ENDDO
      ELSE
         IF c
            DO WHILE .NOT. EOF()
               DISPLAY indate, name, rank, spec
               DO delay1
               SKIP
            ENDDO
```

```
                ELSE
                   IF d
                      DO WHILE .NCT. EOF()
                         DISPLAY outdate, name, rank, spec
                         DO delay1
                         SKIP
                      ENDDO
                   ENDIF
                ENDIF
             ENDIF
          ENDIF
       ENDIF
       CLEAR
       CLOSE DATABASES
       IF .NOT. b
          DELETE FILE ordcrew.ndx
       ENDIF

       STORE ' ' TO ansr
       @ 20,28 SAY 'DO YOU WANT TO SEE OR PRINT AGAIN'
       @ 21,28 SAY '   ONE OF THE AVAILABLE LISTS?'
       @ 22,28 SAY 'ENTER YOUR ANSWER (Y/N) ==>' GET ansr
       READ
       IF UPPER(ansr) # 'Y'
          STORE 'N' TO ans
       ENDIF
    ENDDO

    CLEAR
    CLOSE DATABASES
    RETURN
```

```
*** PROGRAM LIST2

CLEAR
SELECT 1
USE ranks
SELECT 2
USE specialt
SELECT 3
USE infocrew
DELETE NEXT 100
PACK
SELECT 4
USE crewmemb
INDEX ON name TO crewmemb
GO TOP

DO screen2
@  9,29 SAY 'AYXILIARY FILE CREATION'
STORE .T. TO again
DO WHILE again
   IF EOF()
      STORE .F. TO again
   ELSE
      SELECT 1
      GO TOP
      LOCATE FOR rankcode = D->rank
      SELECT 2
      GO TOP
      LOCATE FOR speccode = D->spec
      SELECT 3
      APPEND BLANK
      REPLACE name     WITH D->name
      REPLACE rank     WITH A->rankname
      REPLACE spec     WITH B->specname
      REPLACE address WITH D->address
      REPLACE phone    WITH D->phone
      SELECT 4
      SKIP
   ENDIF
ENDDO
STORE .F. TO printer
STORE ' ' TO ans
DO WHILE UPPER(ans) # 'N'
   STORE .F. TO a
   STORE .F. TO b
   STORE .F. TO c
   STORE .F. TO d
   DO screen2
   @  9,34 SAY 'YOUR CHOICE'
   @ 12,28 SAY 'LIST(S) ON SCREEN  :  1'
   @ 13,28 SAY 'LIST(S) ON PRINTER :  2'
```

```
@ 18,23 CLEAR
STORE 0 TO resp
@ 20,28 SAY 'ENTER YOUR CHOICE ==)' GET resp ,
PICTURE '9' RANGE 1,2
READ
IF resp = 2
   STORE .T. TO printer
   @ 20,28 SAY 'PUT YOUR PRINTER ON    '
   DO delay
ENDIF
@ 12,28 SAY 'NAME AND RANK        :  1'
@ 13,28 SAY 'NAME AND PHONE       :  2'
@ 14,28 SAY 'NAME AND ADDRESS     :  3'
@ 15,28 SAY 'NAME-ADDRESS-PHONE   :  4'
@ 18,23 CLEAR
STORE 0 TO resp
@ 20,28 SAY 'ENTER YOUR CHOICE ==)' GET resp ,
PICTURE '9' RANGE 1,4
READ

IF resp = 1
   STORE .T. TO a
ELSE
   IF resp = 2
      STORE .T. TO b
   ELSE
      IF resp =3
         STORE .T. TO c
      ELSE
         IF resp = 4
            STORE .T. TO d
         ENDIF
      ENDIF
   ENDIF
ENDIF

SELECT 3
IF printer
   SET PRINT ON
   IF a
      REPORT FORM 1st2a
   ELSE
      IF b
         REPORT FORM 1st2b
      ELSE
         IF c
            REPORT FORM 1st2c
```

```
            ELSE
               IF d
                  REPORT FORM lst2d
               ENDIF
            ENDIF
         ENDIF
      ENDIF
      SET PRINT OFF
   ELSE
      CLEAR
      GO TOP
      IF a
         DO WHILE .NOT. EOF()
            DISPLAY name, rank, spec
            DO delay1
           SKIP
         ENDDO
      ELSE
         IF b
            DO WHILE .NOT. EOF()
               DISPLAY name, phone
               DO delay1
               SKIP
            ENDDO
         ELSE
            IF c
               DO WHILE .NOT. EOF()
                  DISPLAY name, address
                  DO delay1
                  SKIP
               ENDDO
            ELSE
               IF d
                  DO WHILE .NOT. EOF()
                     DISPLAY name, address, phone
                     DO delay1
                     SKIP
                  ENDDO
               ENDIF
            ENDIF
         ENDIF
      ENDIF
   ENDIF
ENDIF
CLEAR

STORE ' ' TO ansr
@ 20,28 SAY 'DO YOU WANT TO SEE OR PRINT AGAIN'
@ 21,28 SAY '    ONE OF THE AVAILABLE LISTS?'
@ 22,28 SAY 'ENTER YOUR ANSWER (Y/N) ==)' GET ansr
READ
```

```
    IF UPPER(ansr) # 'Y'
       STORE 'N' TO ans
    ENDIF
ENDDO

CLEAR
CLOSE DATABASES
DELETE FILE crewmemb.ndx
RETURN
```

```
*** PROGRAM LIST3

CLEAR
DO screen2
@  9,29 SAY 'AUXILIARY FILE CREATION'
SELECT 1
USE ranks
SELECT 2
USE specialt
SELECT 3
USE deplst
DELETE NEXT 100
PACK
SELECT 4
USE subdeptn
SELECT 5
USE departm
SELECT 6
USE crewmemb
INDEX ON rank TO crewmemb
GO TOP
STORE .T. TO again
DO WHILE again
   IF EOF()
      STORE .F. TO again
   ELSE
      STORE '     ' TO tdpname
      SELECT 1
      LOCATE FOR rankcode = F->rank
      SELECT 2
      GO TOP
      LOCATE FOR speccode = F->spec
      SELECT 4
      GO TOP
      LOCATE FOR subdpcode = B->subdpcode
      SELECT 5
      GO TOP
      LOCATE FOR depcode = D->depcode
      IF EOF()
         STORE 'DECK' TO tdpname
      ENDIF
      SELECT 3
      APPEND BLANK
      REPLACE serno WITH F->serno
      REPLACE name  WITH F->name
      REPLACE rankname  WITH A->rankname
      REPLACE specname  WITH B->specname
      IF tdpname = '     '
         REPLACE depname WITH E->depname
      ELSE
         REPLACE depname WITH tdpname
      ENDIF
```

```
      SELECT 6
      SKIP
   ENDIF
ENDDO

STORE .F. TO printer
STORE ' ' TO ans

DO WHILE UPPER(ans) # 'N'
   SELECT 3
   GO TOP
   STORE .F. TO a
   STORE .F. TO b
   DO screen2
   @  9,34 SAY 'YOUR CHOICE'
   @ 12,28 SAY 'LIST(S) ON SCREEN  :  1'
   @ 13,28 SAY 'LIST(S) ON PRINTER :  2'
   @ 18,23 CLEAR
   STORE 0 TO resp
   @ 20,28 SAY 'ENTER YOUR CHOICE ==>' GET resp ,
   PICTURE '9' RANGE 1,2
   READ
   IF resp = 2
      STORE .T. TO printer
      @ 20,28 SAY 'PUT YOUR PRINTER ON   '
      DO delay
   ENDIF
   @ 12,28 SAY 'DECK DEPERTMENT    :  1'
   @ 13,28 SAY 'MACHINE DEPARTMENT :  2'
   @ 18,23 CLEAR
   STORE 0 TO resp
   @ 20,28 SAY 'ENTER YOUR CHOICE ==>' GET resp ,
   PICTURE '9' RANGE 1,2
   READ

   IF resp = 1
      STORE .T. TO a
   ELSE
      STORE .T. TO b
   ENDIF

   IF printer
      SET PRINT ON
      IF a
         REPORT FORM 1st3 FOR depname = 'DECK      '
      ELSE
         REPORT FORM 1st3 FOR depname = 'MACHINE   '
      ENDIF
      SET PRINT OFF
```

```
   ELSE
      CLEAR
      GO TOP
      IF a
         DO WHILE .NOT. EOF()
            DISPLAY serno, name, rankname, specname, depname ,
            FOR depname = 'DECK      '
         ENDDO
      ELSE
         DO WHILE .NOT. EOF()
            DISPLAY serno, name, rankname, specname, depname ,
            FOR depname = 'MACHINE   '
         ENDDO
      ENDIF
   ENDIF
   DO delay
   CLEAR

   STORE ' ' TO ansr
   @ 20,28 SAY 'DO YOU WANT TO SEE OR PRINT AGAIN'
   @ 21,28 SAY '   ONE OF THE AVAILABLE LISTS?'
   @ 22,28 SAY 'ENTER YOUR ANSWER (Y/N) ==>' GET ansr
   READ
   IF UPPER(ansr) # 'Y'
      STORE 'N' TO ans
   ENDIF
ENDDO

CLEAR
CLOSE DATABASES
RETURN
```

```
*** PROGRAM LIST4

CLEAR
DO screen2
@  9,29 SAY 'AUXILIARY FILE CREATION'
SELECT 1
USE ranks
SELECT 2
USE specialt
SELECT 3
USE sdeplst
DELETE NEXT 100
PACK
SELECT 4
USE subdeptn
SELECT 5
USE crewmemb
INDEX ON rank TO crewmemb
GO TOP
STORE .T. TO again
DO WHILE again
   IF EOF()
      STORE .F. TO again
   ELSE
      SELECT 1
      LOCATE FOR rankcode = E->rank
      SELECT 2
      GO TOP
      LOCATE FOR speccode = E->spec
      SELECT 4
      GO TOP
      LOCATE FOR subdpcode = B->subdpcode
      SELECT 3
      APPEND BLANK
      REPLACE serno WITH E->serno
      REPLACE name  WITH E->name
      REPLACE rankname  WITH A->rankname
      REPLACE specname  WITH B->specname
      REPLACE sdpname WITH D->sdpname
      SELECT 5
      SKIP
   ENDIF
ENDDO

STORE .F. TO printer
STORE ' ' TO ans
```

```
DO WHILE UPPER(ans) # 'N'
   SELECT 3
   GO TOP
   STORE .F. TO deck
   STORE .F. TO machine
   DO screen2
   @  9,34 SAY 'YOUR CHOICE'
   @ 12,28 SAY 'LIST(S) ON SCREEN  :  1'
   @ 13,28 SAY 'LIST(S) ON PRINTER :  2'
   @ 18,23 CLEAR
   STORE 0 TO resp
   @ 20,28 SAY 'ENTER YOUR CHOICE ==>' GET resp ,
   PICTURE '9' RANGE 1,2
   READ
   IF resp = 2
      STORE .T. TO printer
      @ 20,28 SAY 'PUT YOUR PRINTER ON   '
      DO delay
   ENDIF
   @ 12,28 SAY 'DECK DEPERTMENT     :  1'
   @ 13,28 SAY 'MACHINE DEPARTMENT :  2'
   @ 18,23 CLEAR
   STORE 0 TO answr
   @ 20,28 SAY 'ENTER YOUR CHOICE ==>' GET answr ,
   PICTURE '9' RANGE 1,2
   READ

   IF answr = 1
      STORE .T. TO deck
      STORE  0  TO pref
      @ 11,28 SAY 'ADMINISTRATION ..... 1'
      @ 12,28 SAY 'COMBAT INFORM ..... 2'
      @ 13,28 SAY 'COMMUNICATION ..... 3'
      @ 14,28 SAY 'NAVIGATION ..... 4'
      @ 15,28 SAY 'WEAPONS ..... 5'
      @ 18,23 CLEAR                    '
      @ 20,28 SAY 'ENTER YOUR CHOICE ==>' GET pref ,
      PICTURE '9' RANGE 1,5
      READ
   ELSE
      STORE 0 TO pref
      @ 11,28 SAY 'DAMAGE CONTROL ..... 1'
      @ 12,28 SAY 'ELECTRIC INSTAL ..... 2'
      @ 13,28 SAY 'ELECTRON EQUIPT ..... 3'
      @ 14,28 SAY 'MAIN ENGINES ..... 4'
      @ 15,28 SAY 'SPARE PARTS ..... 5'
      @ 18,23 CLEAR                    '
      @ 20,28 SAY 'ENTER YOUR CHOICE ==>' GET pref ,
      PICTURE '9' RANGE 1,5
      READ
   ENDIF
```

```
IF printer
   SET PRINT ON
   IF deck
      DO CASE
         CASE pref = 1
              SET PRINT OF
              SET COLOR TO W*
              @  9,34 SAY '** SORRY **'
              SET COLOR TO W
              @ 11,26 SAY '                                '
              @ 12,26 SAY 'I CANNOT PROVIDE YOU THIS LIST'
              @ 13,26 SAY '  THIS SUBDEPARTMENT MUST BE  '
              @ 14,26 SAY '         MANNED MANUALLY      '
              @ 15,26 SAY '                                '
              DO delay2
         CASE pref = 2
              REPORT FORM lst4 FOR sdpname ='COMBAT INFO  '
              SET PRINT OFF
         CASE pref = 3
              REPORT FORM lst4 FOR sdpname='COMMUNICATIONS'
              SET PRINT OFF
         CASE pref = 4
              REPORT FORM lst4 FOR sdpname = 'NAVIGATION  '
              SET PRINT OFF
         CASE pref = 5
              REPORT FORM lst4 FOR sdpname = 'WEAPONS     '
              SET PRINT OFF
      ENDCASE
   ELSE
      DO CASE
         CASE pref = 1
              SET PRINT OFF
              SET COLOR TO W*
              @  9,34 SAY '** SORRY **'
              SET COLOR TO W
              @ 11,26 SAY '
              @ 12,26 SAY 'I CANNOT PROVIDE YOU THIS LIST'
              @ 13,26 SAY '  THIS SUBDEPARTMENT MUST BE  '
              @ 14,26 SAY '         MANNED MANUALLY      '
              DO delay2
         CASE pref = 2
              REPORT FORM lst4 FOR sdpname='ELECTR. INSTAL'
              SET PRINT OFF
         CASE pref = 3
              REPORT FORM lst4 FOR sdpname='ELECTR. EQUIPM'
              SET PRINT OFF
         CASE pref = 4
              REPORT FORM lst4 FOR sdpname='MAIN ENGINES  '
              SET PRINT OFF
```

```
            CASE pref = 5
                 SET PRIN OFF
                 SET COLOR TO W*
                 @  9,34 SAY '** SORRY **'
                 SET COLOR TO W
                 @ 11,26 SAY '                              '
                 @ 12,26 SAY 'I CANNOT PROVIDE YOU THIS LIST'
                 @ 13,26 SAY '  THIS SUBDEPARTMENT MUST BE  '
                 @ 14,26 SAY '         MANNED MANUALLY      '
                 @ 15,26 SAY '                              '
                 DO delay2
         ENDCASE
      ENDIF
   ELSE
      CLEAR
      GO TOP
      IF deck
         DO CASE
            CASE pref = 1
                 DO screen2
                 SET COLOR TO W*
                 @  9,34 SAY '** SORRY **'
                 SET COLOR TO W
                 @ 11,26 SAY '                              '
                 @ 12,26 SAY 'I CANNOT PROVIDE YOU THIS LIST'
                 @ 13,26 SAY '  THIS SUBDEPARTMENT MUST BE  '
                 @ 14,26 SAY '         MANNED MANUALLY      '
                 @ 15,26 SAY '                              '
                 DO delay2
                 CLEAR
            CASE pref = 2
                 DO WHILE .NOT. EOF()
                    DISPLAY name,rankname,specname,sdpname .
                    FOR sdpname = 'COMBAT INFO     '
                 ENDDO
            CASE pref = 3
                 DO WHILE .NOT. EOF()
                    DISPLAY name,rankname,specname,sdpname .
                    FOR sdpname = 'COMMUNICATIONS '
                 ENDDO
            CASE pref = 4
                 DO WHILE .NOT. EOF()
                    DISPLAY name,rankname,specname,sdpname ,
                    FOR sdpname = 'NAVIGATION      '
                 ENDDO
            CASE pref = 5
                 DO WHILE .NOT. EOF()
                    DISPLAY name,rankname,specname,sdpname ,
                    FOR sdpname = 'WEAPONS         '
                 ENDDO
         ENDCASE
```

```
         ELSE
            DO CASE
               CASE pref = 1
                    DO screen2
                    SET COLOR TO W*
                    @  9,34 SAY '** SORRY **'
                    SET COLOR TO W
                    @ 11,26 SAY '                                '
                    @ 12,26 SAY 'I CANNOT PROVIDE YOU THIS LIST'
                    @ 13,26 SAY '  THIS SUBDEPARTMENT MUST BE  '
                    @ 14,26 SAY '        MANNED MANUALLY       '
                    @ 15,26 SAY '                                '
                    DO delay2
                    CLEAR
               CASE pref = 2
                    DO WHILE .NOT. EOF()
                       DISPLAY name, rankname, specname, sdpname ,
                       FOR sdpname = 'ELECTRIC INSTAL'
                    ENDDO
               CASE pref = 3
                    DO WHILE .NOT. EOF()
                       DISPLAY name, rankname, specname, sdpname ,
                       FOR sdpname = 'ELECTRON EQUIPM'
                    ENDDO
               CASE pref = 4
                    DO WHILE .NOT. EOF()
                       DISPLAY name, rankname, specname, sdpname ,
                       FOR sdpname = 'MAIN ENGINES   '
                    ENDDO
               CASE pref = 5
                    DO screen2
                    SET COLOR TO W*
                    @  9,34 SAY '** SORRY **'
                    SET COLOR TO W
                    @ 11,26 SAY '                                '
                    @ 12,26 SAY 'I CANNOT PROVIDE YOU THIS LIST'
                    @ 13,26 SAY '  THIS SUBDEPARTMENT MUST BE  '
                    @ 14,26 SAY '        MANNED MANUALLY       '
                    @ 15,26 SAY '                                '
                    DO delay2
            ENDCASE
         ENDIF
      ENDIF
      STORE ' ' TO ansr
      @ 20,28 SAY 'DO YOU WANT TO SEE OR PRINT AGAIN'
      @ 21,28 SAY '   ONE OF THE AVAILABLE LISTS?'
      @ 22,28 SAY 'ENTER YOUR ANSWER (Y/N) ==>' GET ansr
      READ
      IF UPPER(ansr) # 'Y'
         STORE 'N' TO ans
      ENDIF
   ENDDO
```

```
CLEAR
CLOSE DATABASES
DELETE FILE crewmemb.ndx
RETURN
```

```
*** PROGRAM LIST5

CLEAR
STORE .F. TO a
STORE .F. TO b
STORE .F. TO printer
SELECT 1
USE shift2a
SELECT 2
USE shift2b
SELECT 3
USE ranks
select 4
USE specialt
SELECT 5
USE shiftlst
DELETE NEXT 100
PACK
STORE ' ' TO ans
DO WHILE UPPER(ans) # 'N'
   DO screen2
   @  9,34 SAY 'YOUR CHOICE'
   @ 12,28 SAY 'LIST(S) ON SCREEN  :  1'
   @ 13,28 SAY 'LIST(S) ON PRINTER :  2'
   @ 18,23 CLEAR
   STORE 0 TO resp
   @ 20,28 SAY 'ENTER YOUR CHOICE ==)' GET resp ,
   PICTURE '9' RANGE 1,2
   READ
   IF resp = 2
      STORE .T. TO printer
      @ 20,28 SAY 'PUT YOUR PRINTER ON   '
      DO delay
   ENDIF
   @ 12,28 SAY '                          '
   @ 13,28 SAY '                          '
   @ 12,30 SAY 'SHIFT A ......... 1'
   @ 13,30 SAY 'SHIFT B ......... 2'
   @ 14,30 SAY 'SHIFT A AND B ... 3'
   @ 15,30 SAY 'EXIT ............ 4'
   @ 18,23 CLEAR
   STORE 0 TO resp
   @ 20,28 SAY 'ENTER YOUR CHOICE ==)' GET resp ,
   PICTURE '9' RANGE 1,4
   READ
   DO CASE
      CASE resp = 1
           STORE .T. TO a
           STORE .F. TO b
      CASE resp = 2
           STORE .F. TO a
           STORE .T. TO b
```

```
   CASE resp = 3
        STORE .T. TO a
        STORE .T. TO b
ENDCASE
IF resp # 4
   @  9,25 SAY '                                '
   @ 10,25 SAY '                                '
   @ 11,25 SAY '                                '
   @ 12,25 SAY '                                '
   @ 13,25 SAY '                                '
   @ 14,25 SAY '                                '
   @ 15,25 SAY '                                '

   IF a
      SELECT 1
      GO TOP
      STORE .T. TO again
      DO WHILE  again
         IF EOF()
            STORE .F. TO again
         ELSE
            SET COLOR TO W*
            @ 12,25 SAY '      PROCESSING IN PROGRESS'
            SET COLOR TO W
            SELECT 3
            GO TOP
            LOCATE FOR rankcode = A->rank
            SELECT 4
            GO TOP
            LOCATE FOR speccode = A->spec
            SELECT 5
            APPEND BLANK
            REPLACE rank WITH C->rankname
            REPLACE name WITH A->name
            REPLACE spec WITH D->specname
            SELECT 1
            SKIP
         ENDIF
      ENDDO
      CLEAR
      SELECT 5
      IF printer
         SET PRINT ON
         REPORT FORM lshift2a
         SET PRINT OFF
```

```
      ELSE
         GO TOP
         DO WHILE .NOT. EOF()
            DISPLAY name, rank, spec
            DO delay1
            SKIP
         ENDDO
      ENDIF
   ENDIF
   CLEAR
   GO TOP
   DELETE NEXT 100
   PACK

   IF b
      DO screen2
      @ 10,25 SAY '                                    '
      SELECT 2
      GO TOP
      STORE .T. TO again
      DO WHILE again
         IF EOF()
            STORE .F. TO again
         ELSE
            SET COLOR TO W*
            @ 12,25 SAY '     PROCESSING IN PROGRESS'
            SET COLOR TO W
            SELECT 3
            GO TOP
            LOCATE FOR rankcode = B->rank
            SELECT 4
            GO TOP
            LOCATE FOR speccode = B->spec
            SELECT 5
            APPEND BLANK
            REPLACE rank WITH C->rankname
            REPLACE name WITH B->name
            REPLACE spec WITH D->specname
            SELECT 2
            SKIP
         ENDIF
      ENDDO
      CLEAR
      SELECT 5
      GO TOP
      IF printer
         SET PRINT ON
         REPORT FORM lshift2b
         SET PRINT OFF
```

```
            ELSE
               GO TOP
               DO WHILE .NOT. EOF()
                  DISPLAY name, rank, spec
                  DO delay1
                  SKIP
               ENDDO
            ENDIF
         ENDIF
         CLEAR
         GO TOP
         DELETE NEXT 100
         PACK

         STORE ' ' TO ansr
         @ 20,28 SAY 'DO YOU NEED MORE OF THE ABOVE'
         @ 21,28 SAY '     AVAILABLE LISTS?'
         @ 22,28 SAY 'ENTER YOUR ANSWER (Y/N) ==)' GET ansr
         READ
         IF UPPER(ansr) # 'Y'
            STORE 'N' TO ans
         ENDIF
      ELSE
         STORE 'N' TO ans
      ENDIF
ENDDO

CLEAR
CLOSE DATABASES
RETURN
```

```
*** PROGRAM LIST6

CLEAR
STORE .F. TO a
STORE .F. TO b
STORE .F. TO c
STORE .F. TO printer
SELECT 1
USE shift3a
SELECT 2
USE shift3b
SELECT 3
USE shift3c
SELECT 4
USE ranks
select 5
USE specialt
SELECT 6
USE shiftlst
DELETE NEXT 100
PACK
STORE ' ' TO ans
DO WHILE UPPER(ans) # 'N'
   DO screen2
   @  9,34 SAY 'YOUR CHOICE'
   @ 12,28 SAY 'LIST(S) ON SCREEN  :  1'
   @ 13,28 SAY 'LIST(S) ON PRINTER :  2'
   @ 18,23 CLEAR
   STORE 0 TO resp
   @ 20,28 SAY 'ENTER YOUR CHOICE ==>' GET resp ,
   PICTURE '9' RANGE 1,2
   READ
   IF resp = 2
      STORE .T. TO printer
      @ 20,28 SAY 'PUT YOUR PRINTER ON    '
      DO delay
   ENDIF
   @ 12,28 SAY '                          '
   @ 13,28 SAY '                          '
   @ 12,30 SAY 'SHIFT A ..... 1'
   @ 13,30 SAY 'SHIFT B ..... 2'
   @ 14,30 SAY 'SHIFT C ..... 3'
   @ 15,30 SAY 'EXIT ........ 4'
   @ 18,23 CLEAR
   STORE 0 TO resp
   @ 20,28 SAY 'ENTER YOUR CHOICE ==>' GET resp ,
   PICTURE '9' RANGE 1,4
   READ
```

```
DO CASE
   CASE resp = 1
        STORE .T. TO a
        STORE .F. TO b
        STORE .F. TO c
   CASE resp = 2
        STORE .F. TO a
        STORE .T. TO b
        STORE .F. TO c
   CASE resp = 3
        STORE .F. TO a
        STORE .F. TO b
        STORE .T. TO c
ENDCASE
IF resp # 4
   @  9,25 SAY '                                    '
   @ 10,25 SAY '                                    '
   @ 11,25 SAY '                                    '
   @ 12,25 SAY '                                    '
   @ 13,25 SAY '                                    '
   @ 14,25 SAY '                                    '
   @ 15,25 SAY '                                    '

   IF a
      SELECT 1
      GO TOP
      STORE .T. TO again
      DO WHILE  again
         IF EOF()
            STORE .F. TO again
         ELSE
            SET COLOR TO W*
            @ 12,25 SAY '      PROCESSING IN PROGRESS'
            SET COLOR TO W
            SELECT 4
            GO TOP
            LOCATE FOR rankcode = A->rank
            SELECT 5
            GO TOP
            LOCATE FOR speccode = A->spec
            SELECT 6
            APPEND BLANK
            REPLACE rank WITH D->rankname
            REPLACE name WITH A->name
            REPLACE spec WITH E->specname
            SELECT 1
            SKIP
         ENDIF
      ENDDO
      CLEAR
      SELECT 6
```

```
      IF printer
         SET PRINT ON
         REPORT FORM lshift3a
         SET PRINT OFF
      ELSE
         GO TOP
         DO WHILE .NOT. EOF()
            DISPLAY name, rank, spec
            DO delay1
            SKIP
         ENDDO
      ENDIF
   ENDIF
   CLEAR
   GO TOP
   DELETE NEXT 100
   PACK

   IF b
      DO screen2
      @ 10,25 SAY '                                    '
      SELECT 2
      GO TOP
      STORE .T. TO again
      DO WHILE again
         IF EOF()
            STORE .F. TO again
         ELSE
            SET COLOR TO W*
            @ 12,25 SAY '     PROCESSING IN PROGRESS'
            SET COLOR TO W
            SELECT 4
            GO TOP
            LOCATE FOR rankcode = B->rank
            SELECT 5
            GO TOP
            LOCATE FOR speccode = B->spec
            SELECT 6
            APPEND BLANK
            REPLACE rank WITH D->rankname
            REPLACE name WITH B->name
            REPLACE spec WITH E->specname
            SELECT 2
            SKIP
         ENDIF
      ENDDO
      CLEAR
      SELECT 6
      GO TOP
```

```
      IF printer
         SET PRINT ON
         REPORT FORM 1shift3b
         SET PRINT OFF
      ELSE
         GO TOP
         DO WHILE .NOT. EOF()
            DISPLAY name, rank, spec
            DO delay1
            SKIP
         ENDDO
      ENDIF
   ENDIF
   CLEAR
   GO TOP
   DELETE NEXT 100
   PACK

   IF c
      DO screen2
      @ 10,25 SAY '                                    '
      SELECT 3
      GO TOP
      STORE .T. TO again
      DO WHILE again
         IF EOF()
            STORE .F. TO again
         ELSE
            SET COLOR TO W*
            @ 12,25 SAY '     PROCESSING IN PROGRESS'
            SET COLOR TO W
            SELECT 4
            GO TOP
            LOCATE FOR rankcode = C->rank
            SELECT 5
            GO TOP
            LOCATE FOR speccode = C->spec
            SELECT 6
            APPEND BLANK
            REPLACE rank WITH D->rankname
            REPLACE name WITH C->name
            REPLACE spec WITH E->specname
            SELECT 3
            SKIP
         ENDIF
      ENDDO
      CLEAR
      SELECT 6
      GO TOP
```

```
            IF printer
               SET PRINT ON
               REPORT FORM lshift3c
            ELSE
               GO TOP
               DO WHILE .NOT. EOF()
                  DISPLAY name, rank, spec
                  DO delay1
                  SKIP
               ENDDO
            ENDIF
         ENDIF
         CLEAR
         GO TOP
         DELETE NEXT 100
         PACK

         STORE ' ' TO ansr
         @ 20,28 SAY 'DO YOU NEED MORE OF THE ABOVE'
         @ 21,28 SAY '     AVAILABLE LISTS?'
         @ 22,28 SAY 'ENTER YOUR ANSWER (Y/N) ==)' GET ansr
         READ
         IF UPPER(ansr) # 'Y'
            STORE 'N' TO ans
         ENDIF
      ELSE
         STORE 'N' TO ans
      ENDIF
   ENDDO

   CLEAR
   CLOSE DATABASES
   RETURN
```

```
*** PROGRAM LIST7

CLEAR
STORE .F. TO printer
SELECT 1
USE ranks
select 2
USE specialt
SELECT 3
USE salert
SELECT 4
USE alertlst
DELETE NEXT 100
PACK
STORE ' ' TO ans
DO WHILE UPPER(ans) # 'N'
   DO screen2
   @  9,34 SAY 'YOUR CHOICE'
   @ 12,28 SAY 'LIST(S) ON SCREEN  :  1'
   @ 13,28 SAY 'LIST(S) ON PRINTER :  2'
   @ 18,23 CLEAR
   STORE 0 TO resp
   @ 20,28 SAY 'ENTER YOUR CHOICE ==>' GET resp , .
   PICTURE '9' RANGE 1,2
   READ
   IF resp = 2
      STORE .T. TO printer
      @ 20,28 SAY 'PUT YOUR PRINTER ON    '
      DO delay
   ENDIF
   @  9,25 SAY '                                  '
   @ 10,25 SAY '                                  '
   @ 11,25 SAY '                                  '
   @ 12,25 SAY '                                  '
   @ 13,25 SAY '                                  '

   SET COLOR TO W*
   @ 12,25 SAY '      PROCESSING IN PROGRESS'
   SET COLOR TO W
   SELECT 3
   GO TOP
   DO WHILE .NOT. EOF()
      SELECT 1
      GO TOP
      LOCATE FOR rankcode = C->rank
      SELECT 2
      GO TOP
      LOCATE FOR speccode = C->spec
```

```
      SELECT 4
      APPEND BLANK
      REPLACE rank  WITH A->rankname
      REPLACE name  WITH C->name
      REPLACE spec  WITH B->specname
      REPLACE descr WITH C->descr
      SELECT 3
      SKIP
   ENDDO
   CLEAR
   SELECT 4
   IF printer
      SET PRINT ON
      REPORT FORM lslrt
      SET PRINT OFF
   ELSE
      GO TOP
      DO WHILE .NOT. EOF()
         DISPLAY descr, name, rank, spec
         DO delay1
         SKIP
      ENDDO
   ENDIF
   GO TOP
   DELETE NEXT 100
   PACK
   CLEAR
   STORE ' ' TO ansr
   @ 20,28 SAY 'DO YOU WANT TO SEE OR PRINT THE LIST'
   @ 21,28 SAY '              AGAIN?'
   @ 22,28 SAY 'ENTER YOUR ANSWER (Y/N) ==>' GET ansr
   READ
   IF UPPER(ansr) # 'Y'
      STORE 'N' TO ans
   ENDIF
ENDDO

CLEAR
CLOSE DATABASES
RETURN
```

```
*** PROGRAM LIST8

CLEAR
STORE .F. TO printer
SELECT 1
USE ranks
select 2
USE specialt
SELECT 3
USE aalert
SELECT 4
USE alertlst
DELETE NEXT 100
PACK
STORE ' ' TO ans
DO WHILE UPPER(ans) # 'N'
   DO screen2
   @  9,34 SAY 'YOUR CHOICE'
   @ 12,28 SAY 'LIST(S) ON SCREEN  :  1'
   @ 13,28 SAY 'LIST(S) ON PRINTER :  2'
   @ 18,23 CLEAR
   STORE 0 TO resp
   @ 20,28 SAY 'ENTER YOUR CHOICE ==)' GET resp ,
   PICTURE '9' RANGE 1,2
   READ
   IF resp = 2
      STORE .T. TO printer
      @ 20,28 SAY 'PUT YOUR PRINTER ON   '
      DO delay
   ENDIF
   @  9,25 SAY '                                  '
   @ 10,25 SAY '                                  '
   @ 11,25 SAY '                                  '
   @ 12,25 SAY '                                  '
   @ 13,25 SAY '                                  '

   SET COLOR TO W*
   @ 12,25 SAY '      PROCESSING IN PROGRESS'
   SET COLOR TO W
   SELECT 3
   GO TOP
   DO WHILE .NOT. EOF()
      SELECT 1
      GO TOP
      LOCATE FOR rankcode = C->rank
      SELECT 2
      GO TOP
      LOCATE FOR speccode = C->spec
```

```
         SELECT 4
         APPEND BLANK
         REPLACE rank  WITH A->rankname
         REPLACE name  WITH C->name
         REPLACE spec  WITH B->specname
         REPLACE descr WITH C->descr
         SELECT 3
         SKIP
      ENDDO
      CLEAR
      SELECT 4
      IF printer
         SET PRINT ON
         REPORT FORM lalrt
         SET PRINT OFF
      ELSE
         GO TOP
         DO WHILE .NOT. EOF()
            DISPLAY descr, name, rank, spec
            DO delay1
            SKIP
         ENDDO
      ENDIF
      GO TOP
      DELETE NEXT 100
      PACK
      CLEAR
      STORE ' ' TO ansr
      @ 20,28 SAY 'DO YOU WANT TO SEE OR PRINT THE LIST'
      @ 21,28 SAY '                AGAIN?'
      @ 22,28 SAY 'ENTER YOUR ANSWER (Y/N) ==>' GET ansr
      READ
      IF UPPER(ansr) # 'Y'
         STORE 'N' TO ans
      ENDIF
   ENDDO

   CLEAR
   CLOSE DATABASES
   RETURN
```

```
*** PROGRAM LIST9

CLEAR
STORE .F. TO printer
SELECT 1
USE ranks
select 2
USE specialt
SELECT 3
USE galert
SELECT 4
USE alertlst
DELETE NEXT 100
PACK
STORE ' ' TO ans
DO WHILE UPPER(ans) # 'N'
   DO screen2
   @  9,34 SAY 'YOUR CHOICE'
   @ 12,28 SAY 'LIST(S) ON SCREEN  :  1'
   @ 13,28 SAY 'LIST(S) ON PRINTER :  2'
   @ 19,23 CLEAR
   STORE 0 TO resp
   @ 20,28 SAY 'ENTER YOUR CHOICE ==>' GET resp ,
   PICTURE '9' RANGE 1,2
   READ
   IF resp = 2
      STORE .T. TO printer
      @ 20,28 SAY 'PUT YOUR PRINTER ON   '
      DO delay
   ENDIF
   @  9,25 SAY '                                ,
   @ 10,25 SAY '                                ,
   @ 11,25 SAY '                                ,
   @ 12,25 SAY '                                ,
   @ 13,25 SAY '                                ,

   SET COLOR TO W*
   @ 12,25 SAY '      PROCESSING IN PROGRESS'
   SET COLOR TO W
   SELECT 3
   GO TOP
   DO WHILE .NOT. EOF()
      SELECT 1
      GO TOP
      LOCATE FOR rankcode = C->rank
      SELECT 2
      GO TOP
      LOCATE FOR speccode = C->spec
```

```
      SELECT 4
      APPEND BLANK
      REPLACE rank  WITH A->rankname
      REPLACE name  WITH C->name
      REPLACE spec  WITH B->specname
      REPLACE descr WITH C->descr
      SELECT 3
      SKIP
   ENDDO
   CLEAR
   SELECT 4
   IF printer
      SET PRINT ON
      REPORT FORM iglrt
      SET PRINT OFF
   ELSE
      GO TOP
      DO WHILE .NOT. EOF()
         DISPLAY descr, name, rank, spec
         DO delay1
         SKIP
      ENDDO
   ENDIF
   GO TOP
   DELETE NEXT 100
   PACK
   CLEAR
   STORE ' ' TO ansr
   @ 20,28 SAY 'DO YOU WANT TO SEE OR PRINT THE LIST'
   @ 21,28 SAY '                AGAIN?'
   @ 22,28 SAY 'ENTER YOUR ANSWER (Y/N) ==>' GET ansr
   READ
   IF UPPER(ansr) # 'Y'
      STORE 'N' TO ans
   ENDIF
ENDDO

CLEAR
CLOSE DATABASES
RETURN
```

APPENDIX B

Page No. 1
05/17/86

LIST OF CREW MEMBERS SORTED
ON THOSE NAMES

NAME	RANK	SPECIALITY	[illegible]
Appel John G	SENIOR CHIEF PO	ENGINEER	[illegible]
Armout Paul G	SEAMAN	COMMUNICATION	[illegible]
Armstrong David K	SENIOR CHIEF PO	RADAR USER	[illegible]
Beam Alan K	SEAMAN	ENGINEER	[illegible]
Biondi Daniel M	SEAMAN	WEAPON CONTROL	[illegible]
Cavalini Larry F	SEAMAN	ENGINEER	[illegible]
Clark Andrews I	SEAMAN	WEAPON CONTROL	[illegible]
Clark James D	SEAMAN	WEAPON CONTROL	[illegible]
Cline William R	SEAMAN	ELECTRONIC	[illegible]
Concon Stephen J	LIEUTENANT	DECK	[illegible]
Condon Tim N	PO 1st CLASS	ELECTRICIAN	[illegible]
Edson Alan B	SEAMAN	ENGINEER	[illegible]
Emerson Burt F	1st LIEUTENANT	DECK	[illegible]
Ertle Aaron P	ENSIGN	DECK	[illegible]
Ervin Joseph H	ENSIGN	ENGINEER	[illegible]
Flamini Charles D	SEAMAN	WEAPON USER	[illegible]
Fogel Gregory B	SEAMAN	WEAPON CONTROL	[illegible]
Getline Scott B	SEAMAN	ELECTRICIAN	[illegible]
Gorman Dennis H	PO 1st CLASS	ENGINEER	[illegible]
Hobson Aaron M	PO 3rd CLASS	ENGINEER	[illegible]
Ibel Peter J	PO 2nd CLASS	ELECTRONIC	[illegible]
Iitt Thomas C	SEAMAN	WEAPON USER	[illegible]
Isola Mike L	PO 3rd CLASS	WEAPON USER	[illegible]
Jaffee Jay M	LIEUTENANT	ENGINEER	[illegible]
Jefferson Jack L	ENSIGN	DECK	[illegible]
Kett David G	SEAMAN	ELECTRICIAN	[illegible]
Knubis James P	SEAMAN	ENGINEER	[illegible]
Kohn Robert H	SEAMAN	ENGINEER	[illegible]
Little Frederik J	SEAMAN	WEAPON USER	[illegible]
Lyon Arthur B	CHIEF PO	SUPPLY	[illegible]
Mallon Patrick F	SEAMAN	COMMUNICATION	[illegible]
Markley Daniel T	SEAMAN	NAVIGATION	[illegible]
Martyr Paul J	SEAMAN	ENGINEER	[illegible]
McPherson Jack A	SEAMAN	COMMUNICATION	[illegible]
Miller Jacj T	SEAMAN	WEAPON USER	[illegible]
Nelan James H	MASTER CHIEF PO	WEAPON CONTROL	[illegible]

LIST OF CREW MEMBERS SORTED
ON THOSE NAMES

NAME	RANK	SPECIALTY	SERNO
Newell Peet S	MASTER CHIEF PO	COMMUNICATION	20774
Nezart Jerome G	CHIEF PO	RADAR USER	20841
Nezos Fred T	MASTER CHIEF PO	ELECTRICIAN	20777
Nicholson George R	PO 1st CLASS	NAVIGATION	20819
Nikola Michael E	SEAMAN	ELECTRICIAN	21001
Norton Harold G	PO 2nd CLASS	WEAPON USER	20845
Polk Richard G	SEAMAN	WEAPON USER	20926
Qualls Terry D	SEAMAN	WEAPON USER	20927
Quick Gim G	PO 3rd CLASS	WEAPON CONTROL	20890
Quinn Daniel F	PO 3rd CLASS	NAVIGATION	20901
Ramey Harold A	PO 3rd CLASS	COMMUNICATION	20892
Rugg Bill S	MASTER CHIEF PO	ELECTRONIC	20780
Russ Randy G	SEAMAN	ENGINEER	21451
Russo James D	SENIOR CHIEF PO	WEAPON USER	20785
Sansiveri Dan K	SEAMAN	NAVIGATION	21335
Sestak Timothy W	SEAMAN	NAVIGATION	21336
Shapiro Edwin W	SEAMAN	NAVIGATION	21369
Sorensen Donald M	SEAMAN	ELECTRONIC	95124
Steevens James F	PO 2nd CLASS	WEAPON CONTROL	20854
Sturgeon James K	SEAMAN	ENGINEER	24982
Tally Chris S	LT. COMMANDER	DECK	20734
Tran Mike K	SEAMAN	SANITARY	21409
Trend Ted M	SEAMAN	SUPPLY	21423
Trigo Bum F	CHIEF PO	SANITARY	20807
Unger Jeff H	SEAMAN	ENGINEER	21436
Weingarten Sam F	SEAMAN	RADAR USER	21386
William Robert P	SEAMAN	ENGINEER	21466

LIST OF CREW MEMBERS SORTED
ON THOSE RANKS

RANK	SPECIALTY	NAME	SERNO
LT. COMMANDER	DECK	Tally Chris S	20754
LIEUTENANT	DECK	Concon Stephen J	20756
LIEUTENANT	ENGINEER	Jaffee Jay M	20741
1st LIEUTENANT	DECK	Emerson Burt F	20712
ENSIGN	DECK	Ertle Aaron P	20750
ENSIGN	DECK	Jefferson Jack L	20755
ENSIGN	ENGINEER	Ervin Joseph H	20768
MASTER CHIEF PO	WEAPON CONTROL	Nelan James M	20771
MASTER CHIEF PO	COMMUNICATION	Newell Peet S	20772
MASTER CHIEF PO	ELECTRICIAN	Nezos Fred T	20777
MASTER CHIEF PO	ELECTRONIC	Rugg Bill S	20780
SENIOR CHIEF PO	WEAPON USER	Russo James D	20785
SENIOR CHIEF PO	RADAR USER	Armstrong David K	20791
SENIOR CHIEF PO	ENGINEER	Appel John G	20794
CHIEF PO	RADAR USER	Nezart Jerome G	20801
CHIEF PO	SANITARY	Trigo Bum F	20807
CHIEF PO	SUPPLY	Lyon Arthur B	20811
PO 1st CLASS	NAVIGATION	Nicholson George K	20831
PO 1st CLASS	ENGINEER	Gorman Dennis H	20831
PO 1st CLASS	ELECTRICIAN	Condon Tim N	20840
PO 2nd CLASS	WEAPON USER	Norton Harold G	20845
PO 2nd CLASS	WEAPON CONTROL	Steevens James F	20852
PO 2nd CLASS	ELECTRONIC	Ibel Peter J	20861
PO 3rd CLASS	WEAPON USER	Isola Mike L	20870
PO 3rd CLASS	WEAPON CONTROL	Quick Gim G	20890
PO 3rd CLASS	COMMUNICATION	Ramey Harold A	20892
PO 3rd CLASS	NAVIGATION	Quinn Daniel F	20901
PO 3rd CLASS	ENGINEER	Hobson Aaron M	20910
SEAMAN	WEAPON USER	Litt Thomas C	20916
SEAMAN	WEAPON USER	Wallis Terry D	20927
SEAMAN	WEAPON USER	Polk Richard G	20930
SEAMAN	WEAPON USER	Miller Jacj F	20948
SEAMAN	WEAPON USER	Little Frederik J	20949
SEAMAN	WEAPON USER	Flamini Charles D	20950
SEAMAN	WEAPON CONTROL	Fogel Gregory B	20966
SEAMAN	WEAPON CONTROL	Clark James D	20972
SEAMAN	WEAPON CONTROL	Clark Andrews I	20978
SEAMAN	WEAPON CONTROL	Biondi Daniel M	20995
SEAMAN	COMMUNICATION	Armout Paul G	21024
SEAMAN	COMMUNICATION	McPherson Jack A	21084

06/17/86

LIST OF CREW MEMBERS SORTED
==========================
ON THOSE RANKS
=============

RANK	SPECIALTY	NAME	SERNO
SEAMAN	COMMUNICATION	Mallon Patrick F	21289
SEAMAN	NAVIGATION	Markley Daniel I	21302
SEAMAN	NAVIGATION	Sansiveri Dan R	21335
SEAMAN	NAVIGATION	Sestak Timothy W	21358
SEAMAN	NAVIGATION	Shapiro Edwin W	21369
SEAMAN	RADAR USER	Weingarten Sam F	21366
SEAMAN	SANITARY	Tran Mike R	21499
SEAMAN	SUPPLY	Trend Ted M	[illegible]
SEAMAN	ENGINEER	Unger Jeff H	[illegible]
SEAMAN	ENGINEER	Russ Randy G	21451
SEAMAN	ENGINEER	William Robert P	21466
SEAMAN	ENGINEER	Beam Alan K	21487
SEAMAN	ENGINEER	Edson Alan B	24869
SEAMAN	ENGINEER	Cavalini Larry F	24893
SEAMAN	ENGINEER	Martyr Paul J	24905
SEAMAN	ENGINEER	Knubis James P	24921
SEAMAN	ENGINEER	Kohn Robert H	24931
SEAMAN	ENGINEER	Sturgeon James R	24953
SEAMAN	ELECTRICIAN	Rett David G	24957
SEAMAN	ELECTRICIAN	Getline Scott B	24958
SEAMAN	ELECTRICIAN	Nikola Michael E	25001
SEAMAN	ELECTRONIC	Cline William R	25010
SEAMAN	ELECTRONIC	Sorensen Donald M	[illegible]

LIST OF CREW MEMBERS SORTED
ON THOSE ENROLLMENT DATE

IN DATE	NAME	RANK	SPECIALITY	SERNO
06/06/84	Concon Stephen J	LIEUTENANT	DECK	20756
06/22/84	Armstrong David K	SENIOR CHIEF PO	RADAR USER	20793
07/03/84	Nelan James H	MASTER CHIEF PO	WEAPON CONTROL	20769
07/18/84	Lyon Arthur B	CHIEF PO	SUPPLY	20809
08/19/84	Nezos Fred T	MASTER CHIEF PO	ELECTRICIAN	20777
12/01/84	Iiit Thomas C	SEAMAN	WEAPON USER	20916
12/03/84	Edson Alan B	SEAMAN	ENGINEER	24869
12/08/84	Russ Randy G	SEAMAN	ENGINEER	21451
12/10/84	Kohn Robert H	SEAMAN	ENGINEER	24951
12/12/84	Kett David G	SEAMAN	ELECTRICIAN	24997
12/14/84	Weingarten Sam F	SEAMAN	RADAR USER	21366
12/20/84	Clark Andrews I	SEAMAN	WEAPON CONTROL	20978
01/31/85	Ervin Joseph H	ENSIGN	ENGINEER	20[illegible]
04/24/85	Nicholson George R	PO 1st CLASS	NAVIGATION	20819
05/07/85	Nikola Michael E	SEAMAN	ELECTRICIAN	25001
05/11/85	Little Frederik J	SEAMAN	WEAPON USER	20943
05/14/85	Trend Ted M	SEAMAN	SUPPLY	21421
05/19/85	Cavalini Larry F	SEAMAN	ENGINEER	24891
05/27/85	McPherson Jack A	SEAMAN	COMMUNICATION	21284
06/05/85	Sansiveri Dan K	SEAMAN	NAVIGATION	21321
06/09/85	Miller Jacj T	SEAMAN	WEAPON USER	20948
06/16/85	Hobson Aaron M	PO 3rd CLASS	ENGINEER	20918
06/18/85	Idel Peter J	PO 2nd CLASS	ELECTRONIC	20807
06/27/85	Steevens James F	PO 2nd CLASS	WEAPON CONTROL	20851
06/30/85	Gorman Dennis H	PO 1st CLASS	ENGINEER	20831
07/10/85	Tally Chris S	LT. COMMANDER	DECK	20734
07/11/85	Beam Alan K	SEAMAN	ENGINEER	21497
07/14/85	Appel John G	SENIOR CHIEF PO	ENGINEER	20794
07/17/85	Emerson Burt F	1st LIEUTENANT	DECK	20749
07/18/85	Flamini Charles D	SEAMAN	WEAPON USER	20950
07/19/85	Newell Peet S	MASTER CHIEF PO	COMMUNICATION	20772
07/21/85	Norton Harold G	PO 2nd CLASS	WEAPON USER	20845
07/25/85	Rugg Bill S	MASTER CHIEF PO	ELECTRONIC	20780
08/04/85	Nezart Jerome G	CHIEF PO	RADAR USER	20801
08/19/85	Qualls Terry D	SEAMAN	WEAPON USER	20927
08/24/85	Mallon Patrick F	SEAMAN	COMMUNICATION	21289
09/03/85	Getline Scott B	SEAMAN	ELECTRICIAN	24998
09/04/85	Ertle Aaron P	ENSIGN	DECK	20750
09/06/85	Clark James D	SEAMAN	WEAPON CONTROL	20972
09/17/85	Martyr Paul J	SEAMAN	ENGINEER	24906

LIST OF CREW MEMBERS SORTED
ON THOSE ENROLLMENT DATE

IN DATE	NAME	RANK	SPECIALTY	SERNO
09/20/85	Tran Mike K	SEAMAN	SANITARY	[illegible]
09/24/85	Shapiro Edwin W	SEAMAN	NAVIGATION	[illegible]
10/01/85	Ramey Harold A	PO 3rd CLASS	COMMUNICATION	[illegible]
12/01/85	Sturgeon James K	SEAMAN	ENGINEER	[illegible]
12/04/85	Cline William R	SEAMAN	ELECTRONIC	[illegible]
12/17/85	Armout Paul G	SEAMAN	COMMUNICATION	[illegible]
01/18/86	Pulk Richard G	SEAMAN	WEAPON USER	[illegible]
01/24/86	Biondi Daniel M	SEAMAN	WEAPON CONTROL	[illegible]
01/31/86	Quinn Daniel F	PO 3rd CLASS	NAVIGATION	[illegible]
02/02/86	Markley Daniel T	SEAMAN	NAVIGATION	[illegible]
02/09/86	Russo James D	SENIOR CHIEF PO	WEAPON USER	[illegible]
02/16/86	Sestak Timothy W	SEAMAN	NAVIGATION	[illegible]
02/21/86	William Robert P	SEAMAN	ENGINEER	[illegible]
02/28/86	Jefferson Jack L	ENSIGN	DECK	[illegible]
03/07/86	Unger Jeff H	SEAMAN	ENGINEER	[illegible]
03/11/86	Isola Mike L	PO 3rd CLASS	WEAPON USER	[illegible]
04/01/86	Knubis James P	SEAMAN	ENGINEER	[illegible]
04/02/86	Condon Tim N	PO 1st CLASS	ELECTRICIAN	[illegible]
04/09/86	Quick Gim G	PO 3rd CLASS	WEAPON CONTROL	[illegible]
04/14/86	Sorensen Donald M	SEAMAN	ELECTRONIC	[illegible]
04/23/86	Jaffee Jay M	LIEUTENANT	ENGINEER	[illegible]
05/07/86	Trigo Bum F	CHIEF PO	SANITARY	[illegible]
05/10/86	Fogel Gregory B	SEAMAN	WEAPON CONTROL	[illegible]

LIST OF CREW MEMBERS SORTED
ON THOSE DISENROLLMENT DATE

OUTDATE	NAME	RANK	SPECIALTY	SERNO
08/17/85	Armout Paul G	SEAMAN	COMMUNICATION	21024
08/01/86	Ifft Thomas C	SEAMAN	WEAPON USER	20916
08/03/86	Edson Alan B	SEAMAN	ENGINEER	24069
08/08/86	Russ Randy G	SEAMAN	ENGINEER	21451
08/10/86	Kohn Robert H	SEAMAN	ENGINEER	24501
08/12/86	Kett David G	SEAMAN	ELECTRICIAN	24907
08/14/86	Weingarten Sam F	SEAMAN	RADAR USER	21586
08/20/86	Clark Andrews I	SEAMAN	WEAPON CONTROL	20976
01/07/87	Nikola Michael E	SEAMAN	ELECTRICIAN	25001
01/11/87	Little Frederik J	SEAMAN	WEAPON USER	20949
01/14/87	Trend Ted M	SEAMAN	SUPPLY	21425
01/19/87	Cavalini Larry F	SEAMAN	ENGINEER	24895
01/27/87	McPherson Jack A	SEAMAN	COMMUNICATION	21284
02/05/87	Sansiveri Dan K	SEAMAN	NAVIGATION	21530
02/09/87	Miller Jacj T	SEAMAN	WEAPON USER	20948
03/11/87	Beam Alan K	SEAMAN	ENGINEER	21487
03/18/87	Flamini Charles D	SEAMAN	WEAPON USER	20950
04/19/87	Qualls Terry D	SEAMAN	WEAPON USER	20[illegible]
04/24/87	Mallon Patrick F	SEAMAN	COMMUNICATION	21287
04/24/87	Shapiro Edwin W	SEAMAN	NAVIGATION	21569
05/03/87	Getline Scott B	SEAMAN	ELECTRICIAN	24998
05/06/87	Clark James D	SEAMAN	WEAPON CONTROL	20971
05/17/87	Martyr Paul J	SEAMAN	ENGINEER	24900
05/20/87	Tran Mike K	SEAMAN	SANITARY	21409
08/01/87	Sturgeon James K	SEAMAN	ENGINEER	24985
08/04/87	Cline William R	SEAMAN	ELECTRONIC	20916
09/18/87	Pulk Richard G	SEAMAN	WEAPON USER	20950
09/24/87	Biondi Daniel M	SEAMAN	WEAPON CONTROL	20959
10/02/87	Markley Daniel T	SEAMAN	NAVIGATION	21502
10/16/87	Sestak Timothy W	SEAMAN	NAVIGATION	21558
10/21/87	William Robert P	SEAMAN	ENGINEER	21466
11/07/87	Unger Jeff H	SEAMAN	ENGINEER	21438
01/10/88	Fogel Gregory B	SEAMAN	WEAPON CONTROL	20966
12/01/88	Knubis James P	SEAMAN	ENGINEER	24943
12/14/88	Sorensen Donald M	SEAMAN	ELECTRONIC	95124
/ /	Tally Chris S	LT. COMMANDER	DECK	20734
/ /	Concon Stephen J	LIEUTENANT	DECK	20736
/ /	Jaffee Jay M	LIEUTENANT	ENGINEER	20741
/ /	Emerson Burt F	1st LIEUTENANT	DECK	20749
/ /	Ertle Aaron P	ENSIGN	DECK	20750

LIST OF CREW MEMBERS SORTED
ON THOSE DISENROLLMENT DATE

OUTDATE	NAME	RANK	SPECIALTY	SERNO
/ /	Jefferson Jack L	ENSIGN	DECK	20756
/ /	Ervin Joseph H	ENSIGN	ENGINEER	20760
/ /	Nelan James H	MASTER CHIEF PO	WEAPON CONTROL	20769
/ /	Newell Peet S	MASTER CHIEF PO	COMMUNICATION	20771
/ /	Nezos Fred T	MASTER CHIEF PO	ELECTRICIAN	20777
/ /	Rugg Bill S	MASTER CHIEF PO	ELECTRONIC	20780
/ /	Russo James D	SENIOR CHIEF PO	WEAPON USER	20785
/ /	Armstrong David K	SENIOR CHIEF PO	RADAR USER	20793
/ /	Appel John G	SENIOR CHIEF PO	ENGINEER	20794
/ /	Nezart Jerome G	CHIEF PO	RADAR USER	20801
/ /	Trigo Bum F	CHIEF PO	SANITARY	20807
/ /	Lyon Arthur B	CHIEF PO	SUPPLY	20809
/ /	Nicholson George R	PO 1st CLASS	NAVIGATION	20819
/ /	Gorman Dennis H	PO 1st CLASS	ENGINEER	20831
/ /	Condon Tim N	PO 1st CLASS	ELECTRICIAN	20840
/ /	Norton Harold G	PO 2nd CLASS	WEAPON USER	20843
/ /	Steevens James F	PO 2nd CLASS	WEAPON CONTROL	20852
/ /	Ibel Peter J	PO 2nd CLASS	ELECTRONIC	20867
/ /	Isola Mike L	PO 3rd CLASS	WEAPON USER	20873
/ /	Quick Gim G	PO 3rd CLASS	WEAPON CONTROL	20890
/ /	Ramey Harold A	PO 3rd CLASS	COMMUNICATION	20892
/ /	Quinn Daniel F	PO 3rd CLASS	NAVIGATION	20901
/ /	Hobson Aaron M	PO 3rd CLASS	ENGINEER	20914

06/17/86

ALPHABETICAL LIST OF CREW MEMBERS
WITH RANKS AND SPECIALTIES

NAME	RANK	SPECIALTY
Appel John G	SENIOR CHIEF PO	ENGINEER
Armout Paul G	SEAMAN	COMMUNICATION
Armstrong David K	SENIOR CHIEF PO	RADAR USER
Beam Alan K	SEAMAN	ENGINEER
Biondi Daniel M	SEAMAN	WEAPON CONTROL
Cavalini Larry F	SEAMAN	ENGINEER
Clark Andrews I	SEAMAN	WEAPON CONTROL
Clark James D	SEAMAN	WEAPON CONTROL
Cline William R	SEAMAN	ELECTRONIC
Concon Stephen J	LIEUTENANT	DECK
Condon Tim N	PO 1st CLASS	ELECTRICIAN
Edson Alan B	SEAMAN	ENGINEER
Emerson Burt F	1st LIEUTENANT	DECK
Ertle Aaron P	ENSIGN	DECK
Ervin Joseph H	ENSIGN	ENGINEER
Flamini Charles D	SEAMAN	WEAPON USER
Fogel Gregory B	SEAMAN	WEAPON CONTROL
Getline Scott B	SEAMAN	ELECTRICIAN
Gorman Dennis H	PO 1st CLASS	ENGINEER
Hobson Aaron M	PO 3rd CLASS	ENGINEER
Ibel Peter J	PO 2nd CLASS	ELECTRONIC
Iffit Thomas C	SEAMAN	WEAPON USER
Isola Mike L	PO 3rd CLASS	WEAPON USER
Jaffee Jay M	LIEUTENANT	ENGINEER
Jefferson Jack L	ENSIGN	DECK
Kett David G	SEAMAN	ELECTRICIAN
Knubis James P	SEAMAN	ENGINEER
Kohn Robert H	SEAMAN	ENGINEER
Little Frederik J	SEAMAN	WEAPON USER
Lyon Arthur B	CHIEF PO	SUPPLY
Mallon Patrick F	SEAMAN	COMMUNICATION
Markley Daniel T	SEAMAN	NAVIGATION
Martyr Paul J	SEAMAN	ENGINEER
McPherson Jack A	SEAMAN	COMMUNICATION
Miller Jacj T	SEAMAN	WEAPON USER
Nelan James H	MASTER CHIEF PO	WEAPON CONTROL
Newell Peet S	MASTER CHIEF PO	COMMUNICATION
Nezart Jerome G	CHIEF PO	RADAR USER
Nezos Fred T	MASTER CHIEF PO	ELECTRICIAN
Nicholson George R	PO 1st CLASS	NAVIGATION

ALPHABETICAL LIST OF CREW MEMBERS
WITH RANKS AND SPECIALTIES

NAME	RANK	SPECIALTY
Nikola Michael E	SEAMAN	ELECTRICIAN
Norton Harold G	PO 2nd CLASS	WEAPON USER
Pulk Richard G	SEAMAN	WEAPON USER
Qualls Terry D	SEAMAN	WEAPON USER
Quick Gim G	PO 3rd CLASS	WEAPON CONTROL
Quinn Daniel F	PO 3rd CLASS	NAVIGATION
Ramey Harold A	PO 3rd CLASS	COMMUNICATION
Rugg Bill S	MASTER CHIEF PO	ELECTRONIC
Russ Randy G	SEAMAN	ENGINEER
Russo James D	SENIOR CHIEF PO	WEAPON USER
Sansiveri Dan K	SEAMAN	NAVIGATION
Sestak Timothy W	SEAMAN	NAVIGATION
Shapiro Edwin W	SEAMAN	NAVIGATION
Sorensen Donald M	SEAMAN	ELECTRONIC
Steevens James F	PO 2nd CLASS	WEAPON CONTROL
Sturgeon James K	SEAMAN	ENGINEER
Tally Chris S	LT. COMMANDER	DECK
Tran Mike K	SEAMAN	SANITARY
Trend Ted M	SEAMAN	SUPPLY
Trigo Bum F	CHIEF PO	SANITARY
Unger Jeff H	SEAMAN	ENGINEER
Weingarten Sam F	SEAMAN	RADAR USER
William Robert P	SEAMAN	ENGINEER

Page No. 1
06/17/86
ALPHABETICAL LIST OF CREW MEMBERS
==========
WITH THOSE PHONE NUMBERS
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NAME	PHONE NO
Appel John G	345-6781
Armout Paul G	648-0453
Armstrong David K	373-6782
Beam Alan K	678-0905
Biondi Daniel M	375-5714
Cavalini Larry F	657-3321
Clark Andrews 1	349-8811
Clark James D	379-0876
Cline William R	688-5658
Concon Stephen J	546-8764
Condon Tim N	372-9875
Edson Alan B	876-9504
Emerson Burt F	567-8895
Ertle Aaron P	373-4568
Ervin Joseph H	373-6023
Flamini Charles D	375-6901
Fogel Gregory B	656-7766
Getline Scott B	376-6528
Gorman Dennis H	388-9764
Hobson Aaron M	625-4585
Ibel Peter J	375-6466
Ifft Thomas C	345-6785
Isola Mike L	333-6783
Jaffee Jay M	632-3134
Jefferson Jack L	658-9743
Kett David G	456-9862
Knubis James P	345-8905
Kohn Robert H	677-9991
Little Frederik J	374-6403
Lyon Arthur B	373-6780
Mallon Patrick F	687-7650
Markley Daniel T	467-9970
Martyr Paul J	373-6789
McPherson Jack A	687-9652
Miller Jacj T	372-6402
Nelan James H	456-6789
Newell Peet S	372-6402
Nezart Jerome G	756-9234
Nezos Fred F	375-6406
Nicholson George R	623-3226

06/17/86

ALPHABETICAL LIST OF CREW MEMBERS

WITH THOSE PHONE NUMBERS

NAME	PHONE NO
Nikola Michael E	445-5546
Norton Harold G	598-2366
Pulk Richard G	387-9653
Qualls Terry D	623-3470
Quick Gim G	325-8764
Quinn Daniel F	345-6682
Ramey Harold A	373-6758
Rugg Bill S	456-9087
Russ Randy G	373-4866
Russo James D	546-5578
Sansiveri Dan K	374-6581
Sestak Timothy W	546-7789
Shapiro Edwin W	345-8859
Sorensen Donald M	687-8760
Steevens James F	453-8342
Sturgeon James K	723-6413
Tally Chris S	565-6217
Tran Mike K	478-1234
Trend Ted M	373-6770
Trigo Bum F	373-4911
Unger Jeff H	646-8764
Weingarten Sam F	455-9985
William Robert P	346-8971

Page No. 1
06/17/86

ALPHABETICAL LIST OF CREW MEMBERS
WITH THOSE HOME ADDRESSES

NAME	HOME ADDRESS
Appel John G	15 Diane Bonita
Armout Paul G	21 Pine Aromas
Armstrong David K	16 Denis Carmel
Beam Alan K	24 Franklin Marina
Biondi Daniel M	86 Monroe Marina
Cavalini Larry F	29 Side Carmel
Clark Andrews I	43 Pine Otay
Clark James D	1 Acropolis Salinas
Cline William R	90 Carmen Carmel
Concon Stephen J	44 Pine Bonita
Condon Tim N	60 Sinex Monterey
Edson Alan B	88 Castor S. Jose
Emerson Burt F	41 9th Fresno
Ertle Aaron P	23 Camino Marina
Ervin Joseph H	32 Grove Monterey
Flamini Charles D	22 Cannery Monterey
Fogel Gregory B	36 Coral Carmel
Getline Scott B	13 Vina Monterey
Gorman Dennis H	2 Franklin Fresno
Hobson Aaron M	39 Main Salinas
Ibel Peter J	31 5th Monterey
Iift Thomas C	8 Acacia Salinas
Isola Mike L	99 David S. Cruz
Jaffee Jay M	10 Paso San Diego
Jefferson Jack L	11 Forest S. Clara
Kett David G	44 Story Salinas
Knubis James P	3 14th Monterey
Kohn Robert H	26 Hawk Fresno
Little Frederik J	53 Vista Monterey
Lyon Arthur B	16 Jacobs Carmel
Mallon Patrick F	49 Scott S. Jose
Markley Daniel T	66 Lake Marina
Martyr Paul J	25 Dexter Carmel
McPherson Jack A	12 5th Calaveras
Miller Jacj T	44 Buna Monterey
Nelan James H	67 Paso Salinas
Newell Peet S	60 Desty Monterey
Nezart Jerome G	14 Fox Nestor
Nezos Fred T	19 Franklin Marina
Nicholson George R	18 Elden Gilroy

Page No. 2
06/17/86
ALPHABETICAL LIST OF CREW MEMBERS
WITH THOSE HOME ADDRESSES

NAME	HOME ADDRESS
Nikola Michael E	26 Dolores S. Cruz
Norton Harold G	37 Holman L. Gatos
Pulk Richard G	33 Ruska Reno
Qualls Terry D	65 Desty Moreno
Quick Gim G	22 Maple Napa
Quinn Daniel F	29 6th Aromas
Ramey Harold A	15 Grove Monterey
Rugg Bill S	66 Carlos S. Jose
Russ Randy G	21 Ramona Carmel
Russo James D	77 Hills S. Jose
Sansiveri Dan K	35 Diane Monterey
Sestak Timothy W	2 Fox Los Gatos
Shapiro Edwin W	53 8th Monterey
Sorensen Donald M	27 Rositta P. Alto
Steevens James F	50 Pine Palo Alto
Sturgeon James K	69 Lowell S. Jose
Tally Chris S	360 Spencer Carmel
Tran Mike K	9 Hofman S. Clara
Trend Ted M	93 Ocean Monterey
Trigo Bum F	10 Mountain Carmel
Unger Jeff H	38 David Monterey
Weingarten Sam F	3 River Salinas
William Robert P	3 Parthenon Carmel

Page No. 1
06/17/86

ALPHABETICAL LIST OF CREW MEMBERS
WITH THOSE ADDRESSES AND PHONES

NAME	HOME ADDRESS	PHONE NO
Appel John G	15 Diane Bonita	345-6781
Armout Paul G	21 Pine Aromas	648-0453
Armstrong David K	16 Denis Carmel	373-6782
Beam Alan K	24 Franklin Marina	678-0905
Biondi Daniel M	86 Monroe Marina	375-5714
Cavalini Larry F	29 Side Carmel	657-3321
Clark Andrews I	43 Pine Otay	349-8811
Clark James D	1 Acropolis Salinas	379-0876
Cline William R	90 Carmen Carmel	688-5658
Concon Stephen J	44 Pine Bonita	546-8764
Condon Tim N	60 Sinex Monterey	372-9875
Edson Alan B	88 Castor S. Jose	876-9504
Emerson Burt F	41 9th Fresno	567-8895
Ertle Aaron P	23 Camino Marina	373-4568
Ervin Joseph H	32 Grove Monterey	373-6023
Flamini Charles D	22 Cannery Monterey	375-6901
Fogel Gregory B	36 Coral Carmel	656-7766
Getline Scott B	13 Vina Monterey	376-6528
Gorman Dennis H	2 Franklin Fresno	388-9764
Hobson Aaron M	39 Main Salinas	625-4585
Ibel Peter J	31 5th Monterey	375-6466
Ifit Thomas C	8 Acacia Salinas	345-6785
Isola Mike L	99 David S. Cruz	333-6783
Jaffee Jay M	10 Paso San Diego	632-3134
Jefferson Jack L	11 Forest S. Clara	658-9743
Kett David G	44 Story Salinas	456-9862
Knubis James P	3 14th Monterey	345-8905
Kohn Robert H	26 Hawk Fresno	677-9991
Little Frederik J	53 Vista Monterey	374-6403
Lyon Arthur B	16 Jacobs Carmel	373-6780
Mallon Patrick F	49 Scott S. Jose	687-7650
Markley Daniel T	66 Lake Marina	467-9970
Martyr Paul J	25 Dexter Carmel	373-6789
McPherson Jack A	12 5th Calaveras	687-9652
Miller Jacj T	44 Buna Monterey	372-6402
Nelan James H	67 Paso Salinas	456-6789
Newell Peet S	60 Desty Monterey	372-6402
Nezart Jerome G	14 Fox Nestor	756-9234
Nezos Fred T	19 Franklin Marina	375-6406
Nicholson George R	18 Elden Gilroy	623-3226

06/17/86

ALPHABETICAL LIST OF CREW MEMBERS

WITH THOSE ADDRESSES AND PHONES

NAME	HOME ADDRESS	PHONE NO
Nikola Michael E	26 Dolores S. Cruz	445-5546
Norton Harold G	37 Holman L. Gatos	598-2366
Pulk Richard G	33 Ruska Reno	387-9653
Qualls Terry D	65 Desty Moreno	623-3470
Quick Gim G	22 Maple Napa	325-8764
Quinn Daniel F	29 6th Aromas	345-6682
Ramey Harold A	15 Grove Monterey	373-6758
Rugg Bill S	66 Carlos S. Jose	456-9087
Russ Randy G	21 Ramona Carmel	373-4866
Russo James D	77 Hills S. Jose	546-5578
Sansiveri Dan K	35 Diane Monterey	374-6581
Sestak Timothy W	2 Fox Los Gatos	546-7789
Shapiro Edwin W	53 8th Monterey	345-8859
Sorensen Donald M	27 Rositta P. Alto	687-8760
Steevens James F	50 Pine Palo Alto	453-8342
Sturgeon James K	69 Lowell S. Jose	723-6413
Tally Chris S	360 Spencer Carmel	565-6217
Tran Mike K	9 Hofman S. Clara	478-1234
Trend Ted M	93 Ocean Monterey	373-6770
Trigo Bum F	10 Mountain Carmel	373-4911
Unger Jeff H	38 David Monterey	646-8764
Weingarten Sam F	3 River Sallinas	455-9985
William Robert P	3 Parthenon Carmel	346-8971

DEPARTMENT : .....
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SUPERVISOR : .....

NAME	SERNO	RANK	SPECIALTY	DEPARTMENT
Tally Chris S	20734	LT. COMMANDER	DECK	DECK
Concon Stephen J	20736	LIEUTENANT	DECK	DECK
Emerson Burt F	20749	1st LIEUTENANT	DECK	DECK
Ertle Aaron P	20750	ENSIGN	DECK	DECK
Jefferson Jack L	20756	ENSIGN	DECK	DECK
Nelan James H	20769	MASTER CHIEF PO	WEAPON CONTROL	DECK
Newell Peet S	20772	MASTER CHIEF PO	COMMUNICATION	DECK
Russo James D	20785	SENIOR CHIEF PO	WEAPON USER	DECK
Armstrong David K	20793	SENIOR CHIEF PO	RADAR USER	DECK
Nezart Jerome G	20801	CHIEF PO	RADAR USER	DECK
Trigo Bum F	20807	CHIEF PO	SANITARY	DECK
Lyon Arthur B	20809	CHIEF PO	SUPPLY	DECK
Nicholson George R	20819	PO 1st CLASS	NAVIGATION	DECK
Norton Harold G	20845	PO 2nd CLASS	WEAPON USER	DECK
Steevens James F	20852	PO 2nd CLASS	WEAPON CONTROL	DECK
Isola Mike L	20873	PO 3rd CLASS	WEAPON USER	DECK
Quick Gim G	20890	PO 3rd CLASS	WEAPON CONTROL	DECK
Ramey Harold A	20892	PO 3rd CLASS	COMMUNICATION	DECK
Quinn Daniel F	20901	PO 3rd CLASS	NAVIGATION	DECK
Iitt Thomas C	20916	SEAMAN	WEAPON USER	DECK
Qualls Terry D	20927	SEAMAN	WEAPON USER	DECK
Pulk Richard G	20936	SEAMAN	WEAPON USER	DECK
Miller Jacj T	20948	SEAMAN	WEAPON USER	DECK
Little Frederik J	20949	SEAMAN	WEAPON USER	DECK
Flamini Charles D	20950	SEAMAN	WEAPON USER	DECK
Fogel Gregory B	20966	SEAMAN	WEAPON CONTROL	DECK
Clark James D	20972	SEAMAN	WEAPON CONTROL	DECK
Clark Andrews I	20978	SEAMAN	WEAPON CONTROL	DECK
Biondi Daniel M	20995	SEAMAN	WEAPON CONTROL	DECK
Armout Paul G	21024	SEAMAN	COMMUNICATION	DECK
McPherson Jack A	21284	SEAMAN	COMMUNICATION	DECK
Mallon Patrick F	21289	SEAMAN	COMMUNICATION	DECK
Markley Daniel T	21302	SEAMAN	NAVIGATION	DECK
Sansiveri Dan K	21335	SEAMAN	NAVIGATION	DECK
Sestak Timothy W	21358	SEAMAN	NAVIGATION	DECK
Shapiro Edwin W	21369	SEAMAN	NAVIGATION	DECK
Weingarten Sam F	21386	SEAMAN	RADAR USER	DECK
Tran Mike K	21409	SEAMAN	SANITARY	DECK
Trend Ted M	21423	SEAMAN	SUPPLY	DECK

DEPARTMENT : .....
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SUPERVISOR : .....

NAME	SERNO	RANK	SPECIALTY	DEPARTMENT
Jaffee Jay M	20741	LIEUTENANT	ENGINEER	MACHINE
Ervin Joseph H	20768	ENSIGN	ENGINEER	MACHINE
Nezos Fred T	20777	MASTER CHIEF PO	ELECTRICIAN	MACHINE
Rugg Bill S	20780	MASTER CHIEF PO	ELECTRONIC	MACHINE
Appel John G	20794	SENIOR CHIEF PO	ENGINEER	MACHINE
Gorman Dennis H	20831	PO 1st CLASS	ENGINEER	MACHINE
Condon Tim N	20840	PO 1st CLASS	ELECTRICIAN	MACHINE
Ibel Peter J	20867	PO 2nd CLASS	ELECTRONIC	MACHINE
Hobson Aaron M	20910	PO 3rd CLASS	ENGINEER	MACHINE
Unger Jeff H	21438	SEAMAN	ENGINEER	MACHINE
Russ Randy G	21451	SEAMAN	ENGINEER	MACHINE
William Robert P	21466	SEAMAN	ENGINEER	MACHINE
Beam Alan K	21487	SEAMAN	ENGINEER	MACHINE
Edson Alan B	24869	SEAMAN	ENGINEER	MACHINE
Cavalini Larry F	24893	SEAMAN	ENGINEER	MACHINE
Martyr Paul J	24906	SEAMAN	ENGINEER	MACHINE
Knubis James P	24929	SEAMAN	ENGINEER	MACHINE
Kohn Robert H	24951	SEAMAN	ENGINEER	MACHINE
Sturgeon James K	24983	SEAMAN	ENGINEER	MACHINE
Kett David G	24997	SEAMAN	ELECTRICIAN	MACHINE
Getline Scott B	24998	SEAMAN	ELECTRICIAN	MACHINE
Nikola Michael E	25001	SEAMAN	ELECTRICIAN	MACHINE
Cline William R	25016	SEAMAN	ELECTRONIC	MACHINE
Sorensen Donald M	95124	SEAMAN	ELECTRONIC	MACHINE

SUBDEPARTMENT : .....
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SUPERVISOR : .....

NAME	SERNO	RANK	SPECIALTY	SUBDEPARTMENT
Nelan James H	20769	MASTER CHIEF PO	WEAPON CONTROL	COMBAT INFO
Armstrong David K	20793	SENIOR CHIEF PO	RADAR USER	COMBAT INFO
Nezart Jerome G	20801	CHIEF PO	RADAR USER	COMBAT INFO
Steevens James F	20852	PO 2nd CLASS	WEAPON CONTROL	COMBAT INFO
Quick Gim G	20890	PO 3rd CLASS	WEAPON CONTROL	COMBAT INFO
Fogel Gregory B	20966	SEAMAN	WEAPON CONTROL	COMBAT INFO
Clark James D	20972	SEAMAN	WEAPON CONTROL	COMBAT INFO
Clark Andrews I	20978	SEAMAN	WEAPON CONTROL	COMBAT INFO
Biondi Daniel M	20995	SEAMAN	WEAPON CONTROL	COMBAT INFO
Weingarten Sam F	21386	SEAMAN	RADAR USER	COMBAT INFO

Page No. 1
06/17/86

SUBDEPARTMENT : .....
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SUPERVISOR : .....

NAME	SERNO	RANK	SPECIALTY	SUBDEPARTMENT
Newell Peet S	20772	MASTER CHIEF PO	COMMUNICATION	COMMUNICATIONS
Ramey Harold A	20892	PO 3rd CLASS	COMMUNICATION	COMMUNICATIONS
Armout Paul G	21024	SEAMAN	COMMUNICATION	COMMUNICATIONS
McPherson Jack A	21284	SEAMAN	COMMUNICATION	COMMUNICATIONS
Mallon Patrick F	21289	SEAMAN	COMMUNICATION	COMMUNICATIONS

Page No. 1
06/17/86

SUBDEPARTMENT : .....
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SUPERVISOR : .....

NAME	SERNO	RANK	SPECIALTY	SUBDEPARTMENT
Nicholson George R	20819	PO 1st CLASS	NAVIGATION	NAVIGATION
Quinn Daniel F	20901	PO 3rd CLASS	NAVIGATION	NAVIGATION
Markley Daniel T	21302	SEAMAN	NAVIGATION	NAVIGATION
Sansiveri Dan K	21335	SEAMAN	NAVIGATION	NAVIGATION
Sestak Timothy W	21358	SEAMAN	NAVIGATION	NAVIGATION
Shapiro Edwin W	21369	SEAMAN	NAVIGATION	NAVIGATION

Page No. 1
06/17/86

SUBDEPARTMENT : .....
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SUPERVISOR : .....

NAME	SERNO	RANK	SPECIALTY	SUBDEPARTMENT
Russo James D	20785	SENIOR CHIEF PO	WEAPON USER	WEAPONS
Norton Harold G	20845	PO 2nd CLASS	WEAPON USER	WEAPONS
Isola Mike L	20873	PO 3rd CLASS	WEAPON USER	WEAPONS
Iiit' Thomas C	20916	SEAMAN	WEAPON USER	WEAPONS
Qualls Terry D	20927	SEAMAN	WEAPON USER	WEAPONS
Pulk Richard G	20936	SEAMAN	WEAPON USER	WEAPONS
Miller Jacj T	20948	SEAMAN	WEAPON USER	WEAPONS
Little Frederik J	20949	SEAMAN	WEAPON USER	WEAPONS
Flamini Charles D	20950	SEAMAN	WEAPON USER	WEAPONS

SUBDEPARTMENT : .....
SUPERVISOR : .....

NAME	SERNO	RANK	SPECIALTY	SUBDEPARTMENT
Nezos Fred T	20777	MASTER CHIEF PO	ELECTRICIAN	ELECTRIC INSTAL
Condon Tim N	20840	PO 1st CLASS	ELECTRICIAN	ELECTRIC INSTAL
Kett David G	24997	SEAMAN	ELECTRICIAN	ELECTRIC INSTAL
Getline Scott B	24998	SEAMAN	ELECTRICIAN	ELECTRIC INSTAL
Nikola Michael E	25001	SEAMAN	ELECTRICIAN	ELECTRIC INSTAL

SUBDEPARTMENT : .....
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SUPERVISOR : .....

NAME	SERNO	RANK	SPECIALTY	SUBDEPARTMENT
Rugg Bill S	20780	MASTER CHIEF PO	ELECTRONIC	ELECTRON EQUIPM
Ibel Peter J	20867	PO 2nd CLASS	ELECTRONIC	ELECTRON EQUIPM
Cline William R	25016	SEAMAN	ELECTRONIC	ELECTRON EQUIPM
Sorensen Donald M	95124	SEAMAN	ELECTRONIC	ELECTRON EQUIPM

Page No. 1
06/17/86

SUBDEPARTMENT : .....
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SUPERVISOR : .....

NAME	SERNO	RANK	SPECIALTY	SUBDEPARTMENT
Jaffee Jay M	20741	LIEUTENANT	ENGINEER	MAIN ENGINES
Ervin Joseph H	20768	ENSIGN	ENGINEER	MAIN ENGINES
Appel John G	20794	SENIOR CHIEF PO	ENGINEER	MAIN ENGINES
Gorman Dennis H	20831	PO 1st CLASS	ENGINEER	MAIN ENGINES
Hobson Aaron M	20910	PO 3rd CLASS	ENGINEER	MAIN ENGINES
Unger Jeff H	21438	SEAMAN	ENGINEER	MAIN ENGINES
Russ Randy G	21451	SEAMAN	ENGINEER	MAIN ENGINES
William Robert P	21466	SEAMAN	ENGINEER	MAIN ENGINES
Beam Alan K	21487	SEAMAN	ENGINEER	MAIN ENGINES
Edson Alan B	24869	SEAMAN	ENGINEER	MAIN ENGINES
Cavalini Larry F	24893	SEAMAN	ENGINEER	MAIN ENGINES
Martyr Paul J	24906	SEAMAN	ENGINEER	MAIN ENGINES
Knubis James P	24929	SEAMAN	ENGINEER	MAIN ENGINES
Kohn Robert H	24951	SEAMAN	ENGINEER	MAIN ENGINES
Sturgeon James K	24983	SEAMAN	ENGINEER	MAIN ENGINES

CREW ALLOCATION INTO TWO SHIFTS

(SHIFT "A")

NAME	RANK	SPECIALTY
Tally Chris S	LT. COMMANDER	DECK
Emerson Burt F	1st LIEUTENANT	DECK
Jefferson Jack L	ENSIGN	DECK
Norton Harold G	PO 2nd CLASS	WEAPON USER
Iitt Thomas C	SEAMAN	WEAPON USER
Fulk Richard G	SEAMAN	WEAPON USER
Little Frederik J	SEAMAN	WEAPON USER
Nelan James H	MASTER CHIEF PO	WEAPON CONTROL
Quick Gim G	PO 3rd CLASS	WEAPON CONTROL
Clark James D	SEAMAN	WEAPON CONTROL
Biondi Daniel M	SEAMAN	WEAPON CONTROL
Ramey Harold A	PO 3rd CLASS	COMMUNICATION
McPherson Jack A	SEAMAN	COMMUNICATION
Nicholson George R	PO 1st CLASS	NAVIGATION
Markley Daniel T	SEAMAN	NAVIGATION
Sestak Timothy W	SEAMAN	NAVIGATION
Armstrong David K	SENIOR CHIEF PO	RADAR USER
Weingarten Sam F	SEAMAN	RADAR USER
Tran Mike K	SEAMAN	SANITARY
Trend Ted M	SEAMAN	SUPPLY
Ervin Joseph H	ENSIGN	ENGINEER
Gorman Dennis H	PO 1st CLASS	ENGINEER
Unger Jeff H	SEAMAN	ENGINEER
William Robert P	SEAMAN	ENGINEER
Edson Alan B	SEAMAN	ENGINEER
Martyr Paul J	SEAMAN	ENGINEER
Kohn Robert H	SEAMAN	ENGINEER
Nezos Fred T	MASTER CHIEF PO	ELECTRICIAN
Kett David G	SEAMAN	ELECTRICIAN
Nikola Michael E	SEAMAN	ELECTRICIAN
Ibel Peter J	PO 2nd CLASS	ELECTRONIC
Sorensen Donald M	SEAMAN	ELECTRONIC

CREW ALLOCATION INTO TWO SHIFTS

(SHIFT "B")

NAME	RANK	SPECIALTY
Concon Stephen J	LIEUTENANT	DECK
Ertle Aaron P	ENSIGN	DECK
Russo James D	SENIOR CHIEF PO	WEAPON USER
Isola Mike L	PO 3rd CLASS	WEAPON USER
Qualls Terry D	SEAMAN	WEAPON USER
Miller Jacj T	SEAMAN	WEAPON USER
Flamini Charles D	SEAMAN	WEAPON USER
Steevens James F	PO 2nd CLASS	WEAPON CONTROL
Fogel Gregory B	SEAMAN	WEAPON CONTROL
Clark Andrews I	SEAMAN	WEAPON CONTROL
Newell Peet S	MASTER CHIEF PO	COMMUNICATION
Armout Paul G	SEAMAN	COMMUNICATION
Mallon Patrick F	SEAMAN	COMMUNICATION
Quinn Daniel F	PO 3rd CLASS	NAVIGATION
Sansiveri Dan K	SEAMAN	NAVIGATION
Shapiro Edwin W	SEAMAN	NAVIGATION
Nezart Jerome G	CHIEF PO	RADAR USER
Trigo Bum F	CHIEF PO	SANITARY
Lyon Arthur B	CHIEF PO	SUPPLY
Jaffee Jay M	LIEUTENANT	ENGINEER
Appel John G	SENIOR CHIEF PO	ENGINEER
Hobson Aaron M	PO 3rd CLASS	ENGINEER
Russ Randy G	SEAMAN	ENGINEER
Beam Alan K	SEAMAN	ENGINEER
Cavalini Larry F	SEAMAN	ENGINEER
Knubis James P	SEAMAN	ENGINEER
Sturgeon James K	SEAMAN	ENGINEER
Condon Tim N	PO 1st CLASS	ELECTRICIAN
Getline Scott B	SEAMAN	ELECTRICIAN
Rugg Bill S	MASTER CHIEF PO	ELECTRONIC
Cline William R	SEAMAN	ELECTRONIC

CREW ALLOCATION INTO THREE SHIFTS

(SHIFT "A")

NAME	RANK	SPECIALTY
Tally Chris S	LT. COMMANDER	DECK
Ertle Aaron P	ENSIGN	DECK
Norton Harold G	PO 2nd CLASS	WEAPON USER
Qualls Terry D	SEAMAN	WEAPON USER
Little Frederik J	SEAMAN	WEAPON USER
Steevens James F	PO 2nd CLASS	WEAPON CONTROL
Clark James D	SEAMAN	WEAPON CONTROL
Newell Peet S	MASTER CHIEF PO	COMMUNICATION
McPherson Jack A	SEAMAN	COMMUNICATION
Quinn Daniel F	PO 3rd CLASS	NAVIGATION
Sestak Timothy W	SEAMAN	NAVIGATION
Nezart Jerome G	CHIEF PO	RADAR USER
Tran Mike K	SEAMAN	SANITARY
Jaffee Jay M	LIEUTENANT	ENGINEER
Gorman Dennis H	PO 1st CLASS	ENGINEER
Russ Randy G	SEAMAN	ENGINEER
Edson Alan B	SEAMAN	ENGINEER
Knubis James P	SEAMAN	ENGINEER
Nezos Fred T	MASTER CHIEF PO	ELECTRICIAN
Getline Scott B	SEAMAN	ELECTRICIAN
Ibel Peter J	PO 2nd CLASS	ELECTRONIC

Page No. 1
06/17/86

CREW ALLOCATION INTO THREE SHIFTS

(SHIFT "B")

NAME	RANK	SPECIALTY
Concon Stephen J	LIEUTENANT	DECK
Jefferson Jack L	ENSIGN	DECK
Isola Mike L	PO 3rd CLASS	WEAPON USER
Pulk Richard G	SEAMAN	WEAPON USER
Flamini Charles D	SEAMAN	WEAPON USER
Quick Gim G	PO 3rd CLASS	WEAPON CONTROL
Clark Andrews I	SEAMAN	WEAPON CONTROL
Ramey Harold A	PO 3rd CLASS	COMMUNICATION
Mallon Patrick F	SEAMAN	COMMUNICATION
Markley Daniel T	SEAMAN	NAVIGATION
Shapiro Edwin W	SEAMAN	NAVIGATION
Weingarten Sam F	SEAMAN	RADAR USER
Lyon Arthur B	CHIEF PO	SUPPLY
Ervin Joseph H	ENSIGN	ENGINEER
Hobson Aaron M	PO 3rd CLASS	ENGINEER
William Robert P	SEAMAN	ENGINEER
Cavalini Larry F	SEAMAN	ENGINEER
Konn Robert H	SEAMAN	ENGINEER
Condon Tim N	PO 1st CLASS	ELECTRICIAN
Nikola Michael E	SEAMAN	ELECTRICIAN
Cline William R	SEAMAN	ELECTRONIC

CREW ALLOCATION INTO THREE SHIFTS

(SHIFT "C")

NAME	RANK	SPECIALTY
Emerson Burt F	1st LIEUTENANT	DECK
Russo James D	SENIOR CHIEF PO	WEAPON USER
Tift Thomas C	SEAMAN	WEAPON USER
Miller Jacj T	SEAMAN	WEAPON USER
Nelan James H	MASTER CHIEF PO	WEAPON CONTROL
Fogel Gregory B	SEAMAN	WEAPON CONTROL
Biondi Daniel M	SEAMAN	WEAPON CONTROL
Armout Paul G	SEAMAN	COMMUNICATION
Nicholson George R	PO 1st CLASS	NAVIGATION
Sansiveri Dan K	SEAMAN	NAVIGATION
Armstrong David K	SENIOR CHIEF PO	RADAR USER
Trigo Bum F	CHIEF PO	SANITARY
Trend Ted M	SEAMAN	SUPPLY
Appel John G	SENIOR CHIEF PO	ENGINEER
Unger Jeff H	SEAMAN	ENGINEER
Beam Alan K	SEAMAN	ENGINEER
Martyr Paul J	SEAMAN	ENGINEER
Sturgeon James K	SEAMAN	ENGINEER
Kett David G	SEAMAN	ELECTRICIAN
Rugg Bill S	MASTER CHIEF PO	ELECTRONIC
Sorensen Donald M	SEAMAN	ELECTRONIC

SHIP ORGANIZATION DURING SURFACE ALERT

DESCRIPTION	NAME OF CREW MEMB.	RANK	SPECIALTY
COMMAND OFFICER	Tally Chris S	LT. COMMANDER	DECK
NAVIGATOR	Ertle Aaron P	ENSIGN	DECK
NAVIG. RADAR	Weingarten Sam F	SEAMAN	RADAR USER
HELMSMAN	Nicholson George R	PO 1st CLASS	NAVIGATION
HF BRIDGE COMM.	Ramey Harold A	PO 3rd CLASS	COMMUNICATION
UHF BRIDGE COMM	Armout Paul G	SEAMAN	COMMUNICATION
LEFT OBSERVER	Markley Daniel T	SEAMAN	NAVIGATION
RIGHT OBSERVER	Sansiveri Dan K	SEAMAN	NAVIGATION
CIC SUPERVISOR	Concon Stephen J	LIEUTENANT	DECK
AIR RADAR	Nezart Jerome G	CHIEF PO	RADAR USER
SURFACE RADAR	Armstrong David K	SENIOR CHIEF PO	RADAR USER
TRACK RADAR	Quick Gim G	PO 3rd CLASS	WEAPON CONTROL
CIC COMMUNICAT.	Lyon Arthur B	CHIEF PO	SUPPLY
CENTR WEAP CONT	Emerson Burt F	1st LIEUTENANT	DECK
GUN 31 CONSOLE	Norton Harold G	PO 2nd CLASS	WEAPON USER
31 AMMO SUPPLI	Iffit Thomas C	SEAMAN	WEAPON USER
GUN 32 CONSOLE	Russo James D	SENIOR CHIEF PO	WEAPON USER
32 AMMO SUPPLI	Qualls Terry D	SEAMAN	WEAPON USER
GUN 33 CONSOLE	Isola Mike L	PO 3rd CLASS	WEAPON USER
33 AMMO SUPPLI	Pulk Richard G	SEAMAN	WEAPON USER
TORPEDO TUBE 1	Fogel Gregory B	SEAMAN	WEAPON CONTROL
TORPEDO TUBE 2	Clark James D	SEAMAN	WEAPON CONTROL
SS MISSILES 1	Clark Andrews I	SEAMAN	WEAPON CONTROL
TELETYPE 1	Newell Peet S	MASTER CHIEF PO	COMMUNICATION
TELETYPE 2	McPherson Jack A	SEAMAN	COMMUNICATION
HF COMMUNICAT	Mallon Patrick F	SEAMAN	COMMUNICATION
SURG ROOM SUPER	Trigo Bum F	CHIEF PO	SANITARY
SURG ROOM1	Tran Mike K	SEAMAN	SANITARY
ENG CONTR ROOM	Jaffee Jay M	LIEUTENANT	ENGINEER
MAIN ENG1 ASS1	Gorman Dennis H	PO 1st CLASS	ENGINEER
MAIN ENG1 ASS2	Unger Jeff H	SEAMAN	ENGINEER
MAIN ENG2 ASS1	Hobson Aaron M	PO 3rd CLASS	ENGINEER
MAIN ENG2 ASS2	Russ Randy G	SEAMAN	ENGINEER
ELECTR GENERAT1	Kett David G	SEAMAN	ELECTRICIAN
ELECTR GENERAT2	Getline Scott B	SEAMAN	ELECTRICIAN
ELECTR GENERAT3	Nikola Michael E	SEAMAN	ELECTRICIAN
DISTR TABLE 1	Nezos Fred T	MASTER CHIEF PO	ELECTRICIAN
DISTR TABLE 2	Condon Tim N	PO 1st CLASS	ELECTRICIAN
DAMAGE CONTROL1	Ervin Joseph H	ENSIGN	ENGINEER
DAMAGE CONTROL2	Appel John G	SENIOR CHIEF PO	ENGINEER
DAMAGE CONTROL3	Quinn Daniel F	PO 3rd CLASS	NAVIGATION
RADIO ROOM SUP	Jefferson Jack L	ENSIGN	DECK

SHIP ORGANIZATION DURING SURFACE ALERT

DESCRIPTION	NAME OF CREW MEMB.	RANK	SPECIALTY
ESM	Nelan James H	MASTER CHIEF PO	WEAPON CONTROL
ECM	Rugg Bill S	MASTER CHIEF PO	ELECTRONIC
31 AMMO SUPPL2	Steevens James F	PO 2nd CLASS	WEAPON CONTROL
32 AMMO SUPPL2	Ibel Peter J	PO 2nd CLASS	ELECTRONIC
33 AMMO SUPPL2	Miller Jacj T	SEAMAN	WEAPON USER
SS MISS CONTR	Little Frederik J	SEAMAN	WEAPON USER
SS MISS TELEPH	Flamini Charles D	SEAMAN	WEAPON USER
SS MISSILES 2	Biondi Daniel M	SEAMAN	WEAPON CONTROL
SURG ROOM2	Sestak Timothy W	SEAMAN	NAVIGATION
SURG ROOM3	Shapiro Edwin W	SEAMAN	NAVIGATION
DAMAGE CONTROL4	Trend Ted M	SEAMAN	SUPPLY
DAMAGE CONTROL5	William Robert P	SEAMAN	ENGINEER
DAMAGE CONTROL6	Beam Alan K	SEAMAN	ENGINEER
DAMAGE CONTROL7	Edson Alan B	SEAMAN	ENGINEER
DAMAGE CONTROL8	Cavalini Larry F	SEAMAN	ENGINEER

SHIP ORGANIZATION DURING AIR ALERT

DESCRIPTION	NAME OF CREW MEMB.	RANK	SPECIALTY
COMMAND OFFICER	Tally Chris S	LT. COMMANDER	DECK
NAVIGATOR	Ertle Aaron P	ENSIGN	DECK
NAVIG. RADAR	Weingarten Sam F	SEAMAN	RADAR USER
HELMSMAN	Nicholson George R	PO 1st CLASS	NAVIGATION
HF BRIDGE COMM.	Ramey Harold A	PO 3rd CLASS	COMMUNICATION
UHF BRIDGE COMM	Armout Paul G	SEAMAN	COMMUNICATION
LEFT OBSERVER	Markley Daniel T	SEAMAN	NAVIGATION
RIGHT OBSERVER	Sansiveri Dan K	SEAMAN	NAVIGATION
CIC SUPERVISOR	Concon Stephen J	LIEUTENANT	DECK
AIR RADAR	Nezart Jerome G	CHIEF PO	RADAR USER
SURFACE RADAR	Armstrong David K	SENIOR CHIEF PO	RADAR USER
TRACK RADAR	Quick Gim G	PO 3rd CLASS	WEAPON CONTROL
CIC COMMUNICAT.	Lyon Arthur B	CHIEF PO	SUPPLY
CENTR WEAP CONT	Emerson Burt F	1st LIEUTENANT	DECK
GUN 31 CONSOLE	Norton Harold G	PO 2nd CLASS	WEAPON USER
31 AMMO SUPPLI	Iffit Thomas C	SEAMAN	WEAPON USER
GUN 32 CONSOLE	Russo James D	SENIOR CHIEF PO	WEAPON USER
32 AMMO SUPPLI	Qualls Terry D	SEAMAN	WEAPON USER
GUN 33 CONSOLE	Isola Mike L	PO 3rd CLASS	WEAPON USER
33 AMMO SUPPLI	Pulk Richard G	SEAMAN	WEAPON USER
GUN 41 CONTROL	Miller Jacj T	SEAMAN	WEAPON USER
GUN 42 CONTROL	Little Frederik J	SEAMAN	WEAPON USER
A/A MISS CONTR	Steevens James F	PO 2nd CLASS	WEAPON CONTROL
A/A MISSILES 1	Fogel Gregory B	SEAMAN	WEAPON CONTROL
TELETYPE 1	Newell Peet S	MASTER CHIEF PO	COMMUNICATION
TELETYPE 2	McPherson Jack A	SEAMAN	COMMUNICATION
HF COMMUNICAT	Mallon Patrick F	SEAMAN	COMMUNICATION
SURG ROOM SUPER	Trigo Bum F	CHIEF PO	SANITARY
SURG ROOM1	Tran Mike K	SEAMAN	SANITARY
ENG CONTR ROOM	Jaffee Jay M	LIEUTENANT	ENGINEER
MAIN ENG1 ASS1	Gorman Dennis H	PO 1st CLASS	ENGINEER
MAIN ENG1 ASS2	Unger Jeff H	SEAMAN	ENGINEER
MAIN ENG2 ASS1	Hobson Aaron M	PO 3rd CLASS	ENGINEER
MAIN ENG2 ASS2	Russ Randy G	SEAMAN	ENGINEER
ELECTR GENERAT1	Kett David G	SEAMAN	ELECTRICIAN
ELECTR GENERAT2	Getline Scott B	SEAMAN	ELECTRICIAN
ELECTR GENERAT3	Nikola Michael E	SEAMAN	ELECTRICIAN
DISTR TABLE 1	Nezos Fred T	MASTER CHIEF PO	ELECTRICIAN
DISTR TABLE 2	Condon Tim N	PO 1st CLASS	ELECTRICIAN
DAMAGE CONTROL1	Ervin Joseph H	ENSIGN	ENGINEER
DAMAGE CONTROL2	Appel John G	SENIOR CHIEF PO	ENGINEER
DAMAGE CONTROL3	Quinn Daniel F	PO 3rd CLASS	NAVIGATION

SHIP ORGANIZATION DURING AIR ALERT

DESCRIPTION	NAME OF CREW MEMB.	RANK	SPECIALTY
RADIO ROOM SUP	Jefferson Jack L	ENSIGN	DECK
ESM	Nelan James H	MASTER CHIEF PO	WEAPON CONTROL
ECM	Rugg Bill S	MASTER CHIEF PO	ELECTRONIC
31 AMMO SUPPL2	Ibel Peter J	PO 2nd CLASS	ELECTRONIC
32 AMMO SUPPL2	Flamini Charles D	SEAMAN	WEAPON USER
33 AMMO SUPPL2	Clark James D	SEAMAN	WEAPON CONTROL
A/A MISS TELEPH	Clark Andrews I	SEAMAN	WEAPON CONTROL
A/A MISSILES 2	Biondi Daniel M	SEAMAN	WEAPON CONTROL
SURG ROOM2	Sestak Timothy W	SEAMAN	NAVIGATION
SURG ROOM3	Shapiro Edwin W	SEAMAN	NAVIGATION
DAMAGE CONTROL4	Trend Ted M	SEAMAN	SUPPLY
DAMAGE CONTROL5	William Robert P	SEAMAN	ENGINEER
DAMAGE CONTROL6	Beam Alan K	SEAMAN	ENGINEER
DAMAGE CONTROL7	Edson Alan B	SEAMAN	ENGINEER
DAMAGE CONTROL8	Cavalini Larry F	SEAMAN	ENGINEER

SHIP ORGANIZATION DURING GENERAL ALERT

DESCRIPTION	NAME OF CREW MEMB.	RANK	SPECIALTY
COMMAND OFFICER	Tally Chris S	LT. COMMANDER	DECK
NAVIGATOR	Ertle Aaron P	ENSIGN	DECK
NAVIG. RADAR	Weingarten Sam F	SEAMAN	RADAR USER
HELMSMAN	Nicholson George R	PO 1st CLASS	NAVIGATION
HF BRIDGE COMM.	Ramey Harold A	PO 3rd CLASS	COMMUNICATION
UHF BRIDGE COMM	Armout Paul G'	SEAMAN	COMMUNICATION
LEFT OBSERVER	Markley Daniel T	SEAMAN	NAVIGATION
RIGHT OBSERVER	Sansiveri Dan K	SEAMAN	NAVIGATION
CIC SUPERVISOR	Concon Stephen J	LIEUTENANT	DECK
AIR RADAR	Nezart Jerome G	CHIEF PO	RADAR USER
SURFACE RADAR	Armstrong David K	SENIOR CHIEF PO	RADAR USER
TRACK RADAR	Quick Gim G	PO 3rd CLASS	WEAPON CONTROL
CIC COMMUNICAT.	Lyon Arthur B	CHIEF PO	SUPPLY
CENTR WEAP CONT	Emerson Burt F	1st LIEUTENANT	DECK
GUN 31 CONSOLE	Norton Harold G	PO 2nd CLASS	WEAPON USER
31 AMMO SUPPLI	Iffit Thomas C	SEAMAN	WEAPON USER
GUN 32 CONSOLE	Russo James D	SENIOR CHIEF PO	WEAPON USER
32 AMMO SUPPLI	Qualls Terry D	SEAMAN	WEAPON USER
GUN 33 CONSOLE	Isola Mike L	PO 3rd CLASS	WEAPON USER
33 AMMO SUPPLI	Polk Richard G	SEAMAN	WEAPON USER
GUN 41 CONTROL	Miller Jacj T	SEAMAN	WEAPON USER
GUN 42 CONTROL	Little Frederik J	SEAMAN	WEAPON USER
TORPEDO TUBE 1	Fogel Gregory B	SEAMAN	WEAPON CONTROL
TORPEDO TUBE 2	Clark James D	SEAMAN	WEAPON CONTROL
A/A MISS CONTR	Steevens James F	PO 2nd CLASS	WEAPON CONTROL
A/A MISSILES 1	Clark Andrews I	SEAMAN	WEAPON CONTROL
SS MISSILES 1	Biondi Daniel M	SEAMAN	WEAPON CONTROL
TELETYPE 1	Newell Peet S	MASTER CHIEF PO	COMMUNICATION
TELETYPE 2	McPherson Jack A	SEAMAN	COMMUNICATION
HF COMMUNICAT	Mallon Patrick F	SEAMAN	COMMUNICATION
SURG ROOM SUPER	Trigo Bum F	CHIEF PO	SANITARY
SURG ROOM1	Tran Mike K	SEAMAN	SANITARY
ENG CONTR ROOM	Jaffee Jay M	LIEUTENANT	ENGINEER
MAIN ENG1 ASS1	Gorman Dennis H	PO 1st CLASS	ENGINEER
MAIN ENG1 ASS2	Unger Jeff H	SEAMAN	ENGINEER
MAIN ENG2 ASS1	Hobson Aaron M	PO 3rd CLASS	ENGINEER
MAIN ENG2 ASS2	Russ Randy G	SEAMAN	ENGINEER
ELECTR GENERAT1	Kett David G	SEAMAN	ELECTRICIAN
ELECTR GENERAT2	Getline Scott B	SEAMAN	ELECTRICIAN
ELECTR GENERAT3	Nikola Michael E	SEAMAN	ELECTRICIAN
DISTR TABLE 1	Nezos Fred T	MASTER CHIEF PO	ELECTRICIAN
DISTR TABLE 2	Condon Tim N	PO 1st CLASS	ELECTRICIAN

SHIP ORGANIZATION DURING GENERAL ALERT

DESCRIPTION	NAME OF CREW MEMB.	RANK	SPECIALITY
DAMAGE CONTROL1	Ervin Joseph H	ENSIGN	ENGINEER
DAMAGE CONTROL2	Appel John G	SENIOR CHIEF PO	ENGINEER
DAMAGE CONTROL3	Quinn Daniel F	PO 3rd CLASS	NAVIGATION
RADIO ROOM SUP	Jefferson Jack L	ENSIGN	DECK
ESM	Nelan James H	MASTER CHIEF PO	WEAPON CONTROL
ECM	Rugg Bill S	MASTER CHIEF PO	ELECTRONIC
31 AMMO SUPPL2	Ibel Peter J	PO 2nd CLASS	ELECTRONIC
32 AMMO SUPPL2	Flamini Charles D	SEAMAN	WEAPON USER
33 AMMO SUPPL2	Sestak Timothy W	SEAMAN	NAVIGATION
A/A MISS TELEPH	Shapiro Edwin W	SEAMAN	NAVIGATION
A/A MISSILES 2	Trend Ted M	SEAMAN	SUPPLY
SS MISS CONTR	William Robert P	SEAMAN	ENGINEER
SS MISS TELEPH	Beam Alan K	SEAMAN	ENGINEER
SS MISSILES 2	Edson Alan B	SEAMAN	ENGINEER
SURG ROOM2	Cavalini Larry F	SEAMAN	ENGINEER
SURG ROOM3	Martyr Paul J	SEAMAN	ENGINEER
DAMAGE CONTROL4	Knubis James P	SEAMAN	ENGINEER
DAMAGE CONTROL5	Konn Robert H	SEAMAN	ENGINEER
DAMAGE CONTROL6	Sturgeon James K	SEAMAN	ENGINEER
DAMAGE CONTROL7	Cline William R	SEAMAN	ELECTRONIC
DAMAGE CONTROL8	Sorensen Donald M	SEAMAN	ELECTRONIC

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